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Background Report

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CITY OF CRESCENT CITY GENERAL PLAN

BACKGROUND REPORT

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INTRODUCTION

INTRODUCTION

This *Background Report* documents and assesses information on all issues to be addressed in the General Plan, focusing on existing trends and conditions within the existing city limits and in the surrounding unincorporated area. The Report will also serve as the "environmental setting" portion of the environmental impact report to be prepared on the *General Plan* later in the update program.

Following this Introduction, the report is organized into six chapters, as follows:

- Chapter 1: Resources/Conservation;
- Chapter 2: Land Use and Population;
- Chapter 3: Transportation/Circulation;
- Chapter 4: Public Facilities and Services;
- Chapter 5: Health & Safety; and
- Chapter 6: Noise.

The *Background Report* was prepared jointly by a multi-disciplinary consulting team headed by Mintier & Associates. Jones & Stokes Associates was responsible for preparing Chapter 1, 5, and 6; Dowling Associates prepared Chapter 3; and Mintier & Associates prepared Chapters 2 and 4 and compiled the report. The staff of the Crescent City Planning Department was also involved in the research and critical analysis reflected in the chapters.

REGIONAL SETTING

Located on the Pacific shoreline of Del Norte County midway between the borders of Oregon and Humboldt County, Crescent City is California's northernmost coastal city. Crescent City lies approximately 350 miles north of San Francisco and 330 miles south of Portland, Oregon. The city is bordered by the ocean, broad beaches, coastal bluffs, the harbor, scattered forests, and rural residences. Crescent City, which is bisected by U.S. Highway 101, is the most urbanized part of the county and is the county's only incorporated city. Figure 1 shows Crescent City's regional location relative to the western United States, Northern California, and Del Norte County.

PLANNING AREA

By law, the general plan must cover all territory within the boundaries of the city as well as "any land outside its boundaries which, in the planning agency's judgement, bears relation to its planning" (*Government Code* Section 65300). To meet the intent of the law, the City of Crescent City designated a *Planning Area* that extends beyond the city's incorporated limits and encompasses approximately six square miles. The Planning Area has been defined by an east-west line coinciding with Blackwell Road and includes the area within the Urban Boundary north of Blackwell Road. The eastern boundary follows south along Elk Valley Road and then follows the Federal and State lands on the east (see Figure 2).

URBAN BOUNDARY

Within the Planning Area, the County has an adopted urban boundary for Crescent City that encompasses all land considered for future water and sewer service expansion and thus for future urban development and annexation (see Figure 2). Since it is costly to provide infrastructure in low density areas such as rural communities, extension of water and sewer service is generally prohibited outside this boundary by both jurisdictions. Since development within this boundary is subject to higher densities and intensities, the City and County can provide long-term service planning within this area.

CITY LIMITS

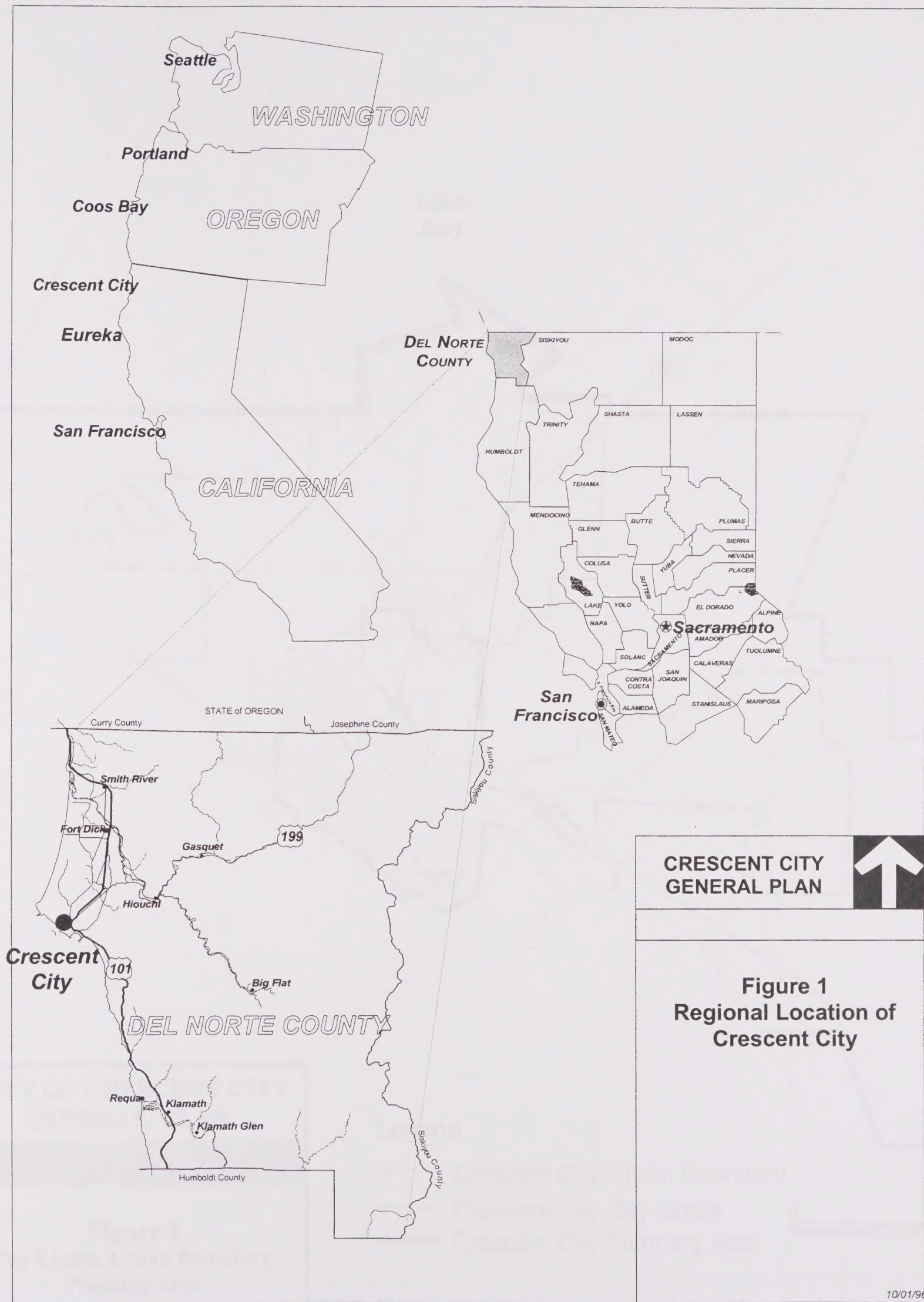
The incorporated city limits contains approximately 1.4 square miles, over which Crescent City exercises zoning control and police powers and provides all public services. Del Norte County plans for and regulates land use and development in the unincorporated area just outside the city limits.

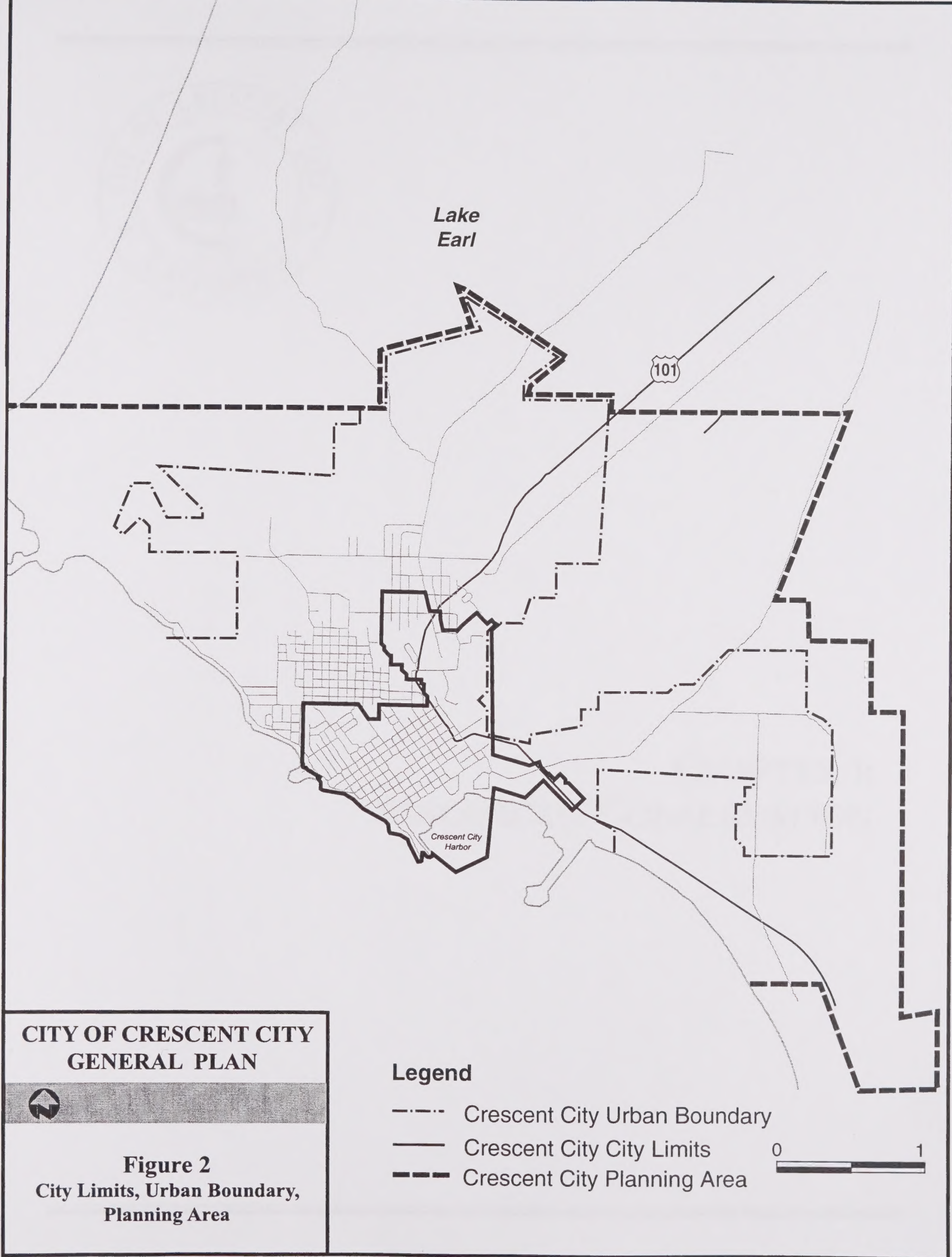
COASTAL ZONE

As California's northernmost coastal city, Crescent City falls under the jurisdiction of the California Coastal Act, which is administered by the California Coastal Commission. The Coastal Act establishes a boundary within which the provisions of the Act are to be applied. The area within this boundary is called the "coastal zone." The Coastal Act defines the coastal zone as follows:

... that land and water area of the State of California from the Oregon border to the border of the Republic of Mexico ... extending seaward to the state's outer limit of jurisdiction, including all offshore islands, and extending inland generally 1,000 yards from the mean high tide line of the sea. In significant coastal estuarine, habitat, and recreational areas it extends inland to the first major ridgeline paralleling the sea or five miles from the mean high tide line of the sea, whichever is less, and in developed urban areas the zone generally extends inland less than 1,000 yards.

Per the requirements of the Coastal Act, the City is required to prepare a local coastal program (LCP) for the portion of its jurisdiction within the coastal zone and to submit the LCP to the Coastal Commission for certification. An LCP includes a land use plan (LUP) which is the relevant portion of the local general plan, including any maps necessary to administer it, the zoning ordinances, zoning district maps, and other legal instruments necessary to implement the land use plan.





Lake
Earl

101

Crescent City
Harbor

CITY OF CRESCENT CITY GENERAL PLAN



Figure 2
City Limits, Urban Boundary,
Planning Area

Legend

- Crescent City Urban Boundary
- Crescent City City Limits
- Crescent City Planning Area

0 1



CHAPTER 1: RESOURCES/CONSERVATION

CHAPTER 1

RESOURCE/CONSERVATION

1.1 INTRODUCTION

Crescent City is surrounded by a diverse and unique mix of natural resources ranging from extensive conifer forests to the sand beaches and dunes of the Pacific Coastal Plain. Although most of the county is covered by mountainous terrain, Crescent City lies on a coastal plain and is one of the few urban areas within Del Norte County. This chapter addresses the following topics:

- Water Resources;
- Soil Resources;
- Vegetation Resources;
- Recreation Resources;
- Scenic Resources
- Cultural Resources; and
- Air Quality.

Consideration of these resources will be the basis of land use and resource planning that maximizes opportunities and minimizes impacts to sensitive areas within the Crescent City Area. The resources identified in this report are fundamental in defining the character and future growth patterns of Crescent City. Planning for the conservation of these resources is a required part of the general plan.

1.2 WATER RESOURCES

This section describes the city's surface and groundwater resources, including the current uses they support, management issues, and flood hazards. Because watershed and water basins do not follow the same geographical boundaries as planning areas or city jurisdictions, portions of this discussion may include areas outside of the city's sphere of influence.

SURFACE WATER RESOURCES

Crescent City is located within the Lake Earl/Jordan Creek watershed drainage basin. However, drainage from the city flows through other minor drainages to the Pacific Ocean. One such drainage area includes Elk Creek, which is a small stream that drains a portion of the Coastal Plain south of Jordan Creek. The mouth of Elk Creek is within the Crescent City Harbor, where it has a one square mile (sq. mi.) floodplain. Its watershed covers roughly 4.8 sq. mi.

Marhoffer Creek is a small coastal stream that drains an extensive marine terrace in the northwest portion of Crescent City, entering the Pacific Ocean at Pebble Beach. Topography in this small drainage ranges from flat terrain to slopes greater than 30 percent.



Bordering the city to the west, other surface water resources of Crescent City include the Harbor waters and the Pacific Ocean. The Harbor depends upon the coastal waters for its livelihood, in addition, they serve as an important recreational resource for local residents and tourists. These ocean waters are abundantly rich in plant and animal marine resources and contain sensitive coastal habitats.

Elk Creek's water quality is sensitive to its proximity to the urban area of Crescent City. Potential threats to surface water quality include runoff from urban area fills and roadway pollutants (e.g., oil). Elk Creek is considered a high-quality fisheries stream and is particularly sensitive to these pollutants.

GROUNDWATER RESOURCES

Crescent City overlies the Smith River Plain Ground Water Basin, which is bordered by the Pacific Ocean on the west and the foothills of the California Coast Ranges to the east. The basin contains abundant supplies of groundwater, approximately 13,000 acre-feet, and an estimated net recharge of 21,000 acre-feet. The plain has an area of about 110 sq. mi., with a north-south length of about 20 miles and a maximum width of about six miles. The north end of the plain narrows abruptly at the mouth of the Smith River (California State Resources Agency, Smith River Plain Groundwater Study 1987). The Smith River basin has an estimated storage capacity of 75,000-90,000 acre-feet. Depths of groundwater range locally and seasonally, but are often approximately 30 feet.

Groundwater generally flows from the mountains down to the coastal plain. There is a divide one mile north of Crescent City where subsurface flow is north to Lake Earl and south to creeks and the Pacific Ocean.

Active recharge and discharge is evident in the Smith River Plain where groundwater elevations increase rapidly during storms and decline after storms end. Recharge is most likely to occur during winter in upland areas, over relatively flat surfaces with deep soils, and under surface waters. Higher rates of recharge occur where local geological deposits are highly permeable (e.g., sand and gravel). One recharge area was identified near the airport. Discharge from the aquifer occurs at seeps and springs, some of which may be beneath streams and lakes. Seasonal discharge from aquifers to streams, lakes, and the ocean is estimated to be at least 8,700 acre-feet during summer and much greater in winter.

The combination of natural discharge and groundwater uses causes groundwater levels to decline during summer. Average summer lowering of groundwater elevation in the Smith River Plain is estimated at seven feet. Groundwater elevations typically recover by February or March as a result of aquifer recharge. Maximum groundwater elevation during the spring months depends on the amount of rain received during winter. Groundwater elevations commonly fluctuate ten feet or more during the year.

HYDROGEOLOGY OF THE SMITH RIVER PLAIN GROUNDWATER BASIN

The Smith River Plain Groundwater Basin has a number of rock formations that form aquifers. In many cases, these formations are connected to each other and to surface waters. There are four different sedimentary rock formations in the Smith River Plain that contain water: marine terraces, river terraces, floodplains, and alluvial fans. These formations vary in thickness, areal extent, and permeability, which affect the quantity and rate of water yield that can be obtained from wells.



Marine terraces (Battery formation) occupy most of the southern half of the Smith River Plain. Because of its large areal coverage, the Battery formation contains most of the groundwater in the Smith River Plain Groundwater Basin. The Battery formation consists of lenticular, poorly stratified beds of silty sand and thin clays that range in thickness from 30 to 70 ft (mean thickness is approximately 45 ft). Some beds of fine- to medium-grained, well-sorted sand are present nearly 25 ft below the ground surface. These sands contain groundwater which can be found at a depth of five to 30 ft (generally around 20 ft). The sands have permeabilities of 150 to 900 gallons per day (gpd) per square foot (sq. ft.) (commonly 350-400 gpd/sq. ft.), which represents a moderately permeable aquifer.

Recharge of the Battery formation aquifers occurs by subsurface flow by way of alluvial fans to the east, sand dunes to the west, and direct infiltration. Clay beds in upper Battery formation limit the rate of recharge in some areas. In general, groundwater flows at slow to moderate rates through this formation. In spite of the large storage capacity of the Battery formation, wells here may not support high rate yields because of low permeabilities and, potentially, low recharge rates.

Floodplain deposits are primarily along the Smith River with a southern extension to Lake Earl and Talawa Slough. Floodplain deposits are highly permeable, poorly sorted sands and gravels ranging in thickness from 40 to 95 feet. They contain large amounts of unconfined water with irrigation wells reporting yields of 200 to 800 gpm. Permeabilities average approximately 10,000 gpd/sq. ft. Large-scale water resource developments (i.e., municipal water systems and irrigation) rely on these aquifers. Water is most likely to flow freely back and forth between these deposits and surface waters. In winter and spring, water is most likely to flow from the Smith River into these deposits. As the water level in the river drops, water will flow back into it.

GROUNDWATER USES

Crescent City relies on groundwater supplies to serve municipal water users. Crescent City has a water system serving approximately 3,500 accounts, with its supply coming from alluvial aquifers along the southern bank of the Smith River. In addition to domestic water uses, groundwater is also used for irrigation in the Crescent City area.

Estimated use of groundwater in the Smith River Plain Groundwater Basin during 1985 was 9,700 acre-feet for irrigation and 3,300 acre-feet for municipal and industrial uses. Crescent City used only a portion of this total amount. The estimated net recharge (i.e., restoring seasonally low groundwater elevations back to spring levels) is 21,000 acre-feet. The difference between use and net recharge is discharged during summer to surface waters and, consequently, may not be available for consumptive use.

Even though abundant groundwater resources exist, these resources may not be sufficient during all periods of time or in all parts of the basin. Water demand increases in summer months when groundwater recharge is lowest. As a result, some aquifers can become dewatered locally (i.e., groundwater elevation drops), which can reduce flow in adjacent streams. Shallow wells along small streams are most susceptible to aquifer dewatering. This aquifer dewatering is most likely to be temporary until autumn and winter rains recharge groundwater.

Potential sources of groundwater contamination include urban storm drainage, onsite sewage disposal, irrigation return flows, and hazardous materials storage. Generally, groundwater can be protected from these



activities with proper management. However, these activities can lead to groundwater contamination during periods of high runoff or flooding if groundwater levels are close to the ground's surface or if stormwater seeps into active or abandoned wells.

Although there is not an identified health risk, groundwater contamination has been a concern at the County Department of Agriculture site near the airport at Crescent City. Toluene and aldicarb have been detected in some groundwater wells; however, this is not a widespread problem in the area. Locally, elevated levels of nitrate have been detected in Smith River Plain wells. None of these sources have been identified as creating a health risk.

The North Coast Regional Water Quality Control Board (Board) has identified onsite sewage systems as a potential water quality concern, especially in developing areas. The Board, however, does issue waste discharge reports allowing new onsite sewage systems, either conventional or Wisconsin-mound systems, to be constructed in developing areas. Areas of critical development around Crescent City include the Elk Creek drainage area and the northernmost portion of Crescent City.

1.3 SOIL RESOURCES

At the present time, the University of California, Davis Agricultural Soil Mapping Project has only completed mapping of a limited area adjacent to the Northern and Eastern Boundaries of the planning area. The majority of the planning area has not been mapped to date; however, mapping efforts by the Natural Resources Conservation Service are currently underway (Howell, pers. comm.). The areas that have been mapped are primarily composed of poorly draining, nonprime Talawa (Ta2-3), Timmons (Ti2), and Hutsinpillar (Hp2-3) soil types. A small area of prime agricultural soil, Arcata (Ar2), exists south of Elk Valley Road. The coastal area is comprised primarily of sand dunes and west sand areas (SD-WSA).

1.4 VEGETATION RESOURCES AND SPECIAL STATUS SPECIES

The vegetation distribution within Crescent City is determined by climate, parent material, and primarily disturbance due to urbanization. The influence of climatic conditions and native soils in the area present opportunities for the occurrence of numerous vegetation communities and wildlife species. However, due to the urbanization of Crescent City, these opportunities are limited within this urban area of Del Norte County.

Although the city itself has little natural vegetation, the outlying areas within the city's sphere of influence contain natural communities comprised of coastal dune and scrub habitats, coniferous forests, and grasslands. Cultural influences, natural disturbances, and urban development have resulted in modifications in species composition and habitat arrangement.

Generalized vegetation communities found in the Crescent City region are described below. Figure 1-1 shows the vegetation resources within Crescent City. Both Crescent City and Del Norte County maintain sensitive habitat maps showing more precise delineations of important vegetation communities (see Figure 1-2).

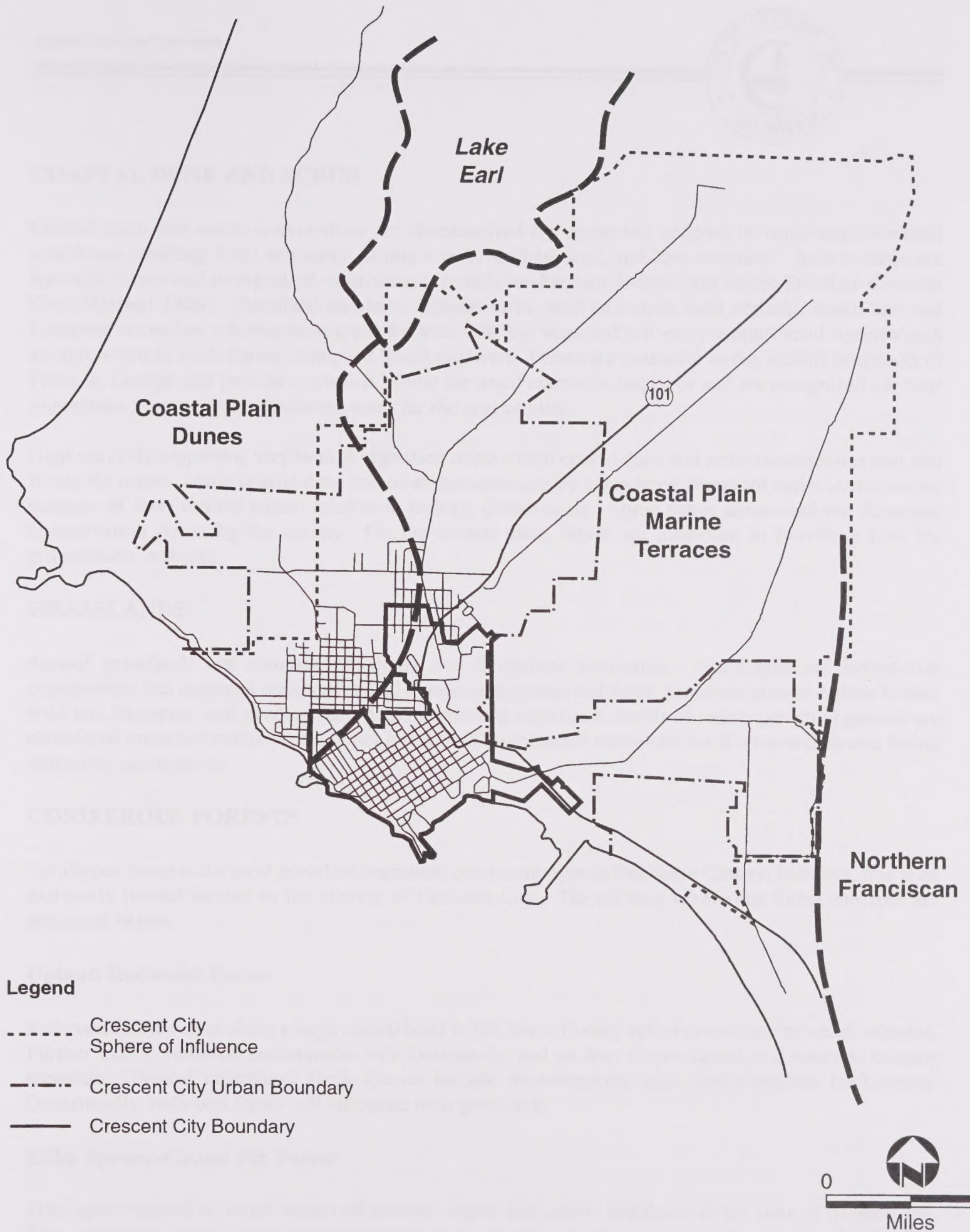


Figure 1-1
Crescent City - Vegetation Resources



COASTAL DUNE AND SCRUB

Coastal dune and scrub communities are characterized by vegetation adapted to harsh environmental conditions resulting from salt spray, strong winds, shifting sand, and low moisture. Active dunes are typically barren and unvegetated, consisting of mobile sand accumulations, and can be found in Crescent City (Holland 1986). Stabilized foredunes support forbs, such as coastal sand verbena, beach bur, and European sea rocket, whereas more protected sites with less wind and salt spray support scrub species such as coyote brush, bush lupine, salal, and beach sagewort. Dunes are extensive in the vicinity and north of Point St. George and provide important habitat for small mammals and birds and are recognized for their importance as groundwater recharge areas for the coastal plain.

High sea cliffs supporting very limited vegetation occur within coastal dune and scrub communities near and facing the ocean. Many coastal dune and scrub communities are considered important native communities because of their limited extent relative to historic distributions. Some dunes are considered Resource Conservation Areas by the county. On the coastal plain, dunes are important in providing sites for groundwater recharge.

GRASSLANDS

Annual grasslands are common regionally and throughout California. Grasslands are herbaceous communities that support a variety of annual or perennial grasses and forbs. Common grasses include brome, wild oat, hairgrass, and needlegrass. Areas supporting significant stands of native perennial grasses are considered important native communities because of their limited statewide distribution and threats facing remaining occurrences.

CONIFEROUS FORESTS

Coniferous forest is the most prevalent vegetation community type in Del Norte County; however, this is an extremely limited habitat in the vicinity of Crescent City. The primary coniferous forest subtypes are described below.

Upland Redwood Forest

Redwood forest occurs along a large coastal band in Del Norte County and is dominated by coast redwood. Further inland, redwood codominates with Douglas-fir, and on drier slopes tanoak and madrone become common. Typical understory shrub species include rhododendron, salal, and evergreen huckleberry. Occasionally, redwood forest will intergrade with grasslands.

Sitka Spruce-Grand Fir Forest

Sitka spruce-grand fir forest occurs on seaward slopes and coastal headlands in the zone of frequent fog. This community's two dominant species form a dense overstory tree layer, commonly with Douglas-fir. The understory supports broadleaved trees, such as red alder and bigleaf maple, shrubs, such as salal, vine maple, and cascara buckthorn, and a variety of perennial herbs including several ferns.



Western Hemlock Forest

Western hemlock forest is found on moist slopes and valley bottoms, sometimes in slightly swampy areas, in the outer North Coast Ranges of Del Norte County. It is similar to and often intergrades with sitka spruce-grand fir forest on exposed coasts, and with upland redwood forest on more drier inland sites.

Douglas-Fir Forest

This community occurs throughout the county in moderately deep, well-drained areas. It is dominated by Douglas-fir, and sometimes supports western hemlock as a codominant. Common understory species include salal and ocean spray.

SPECIAL-STATUS PLANT SPECIES

Special-status plants species are plants that are legally protected under State and Federal Endangered Species Acts or other regulations, and species that are considered sufficiently rare by the scientific community to qualify for such listing. Special-status plants are species in the following categories:

- plants listed or proposed for listing as threatened or endangered under the Federal Endangered Species Act (50 CFR 17.12 [listed plants] and various notices in the Federal Register [proposed species]);
- plants that are Category 1 or 2 candidates for possible future listing as threatened or endangered under the Federal Endangered Species Act (58 FR 188: 51144-51190, September 30, 1993);
- plants listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (14 CCR 670.5);
- plants listed under the California Native Plant Protection Act (Cal. Fish and Game Code, Section 1900 et seq.);
- plants that meet the definitions of rare or endangered under the California Environmental Quality Act (CEQA) (State CEQA Guidelines, Section 15380);
- plants considered by the California Native Plant Society (CNPS) to be "rare, threatened, or endangered in California" (Lists 1B and 2 in Skinner and Pavlik 1994);
- plants listed by CNPS as plants about which more information is needed to determine their status and plants of limited distribution (Lists 3 and 4 in Skinner and Pavlik 1994), which may be included as special-status species on the basis of local significance or recent biological information; and
- plants listed as sensitive by the local U.S. Forest Service region (Forest Service Manual 2670) or U.S. Bureau of Land Management resource area.



Del Norte County supports 115 special-status plant species (Appendix A). Although not all of these species listed for the county occur in the vicinity of Crescent City, those associated with coastal dune and scrub, grasslands, and coniferous forests may be found in the Crescent City area. The listing status, distributions, habitat requirements, and flowering periods for all of these species are shown in Table 1-1 (Skinner and Pavlik 1994, Hickman 1993). Most of these species are associated with serpentine substrates, wetland habitats, coastal habitats, or rocky areas. Of those species occurring on serpentine, many are endemic to the serpentine habitats of northwestern California and southwestern Oregon. Two plants are both Federally and State-listed as endangered (McDonald's rock cress and western lily), and one plant is State-listed as rare (leafy reed grass).

TABLE 1-1

SPECIAL-STATUS PLANTS OF DEL NORTE COUNTY

Species (Common/Scientific Name)	Status ^a Federal/State/CNPS	Habitat	Distribution	Flowering Period
Siskiyou onion <i>Allium siskiyouense</i>	--/--/4	Del Norte, Humboldt, Siskiyou, Trinity, Oregon	Lower montane coniferous forest, Upper montane coniferous forest / rocky, sometimes serpentine	June-July
Evergreen everlasting <i>Antennaria suffrutescens</i>	--/--/4	Del Norte, Humboldt, Oregon	Lower montane coniferous forest (serpentine)	January-July
Howell's manzanita <i>Arctostaphylos hispidula</i>	--/--/4	Del Norte, Humboldt, Sonoma, Oregon	Chaparral (serpentine or sandstone)	March-April
Serpentine arnica <i>Arnica cernua</i>	--/--/4	Del Norte, Humboldt, Siskiyou, Oregon	Lower montane coniferous forest (serpentine)	April-July
Klamath arnica <i>Arnica spathulata</i>	--/--/4	Del Norte, Humboldt, Siskiyou, Trinity, Oregon	Lower montane coniferous forest (serpentine)	May-July
Siskiyou sedge <i>Carex gigas</i>	--/--/4	Del Norte, Plumas, Siskiyou, Trinity, Oregon	Lower montane coniferous forest, Meadows, Upper montane coniferous forest / mesic, sometimes serpentine seeps	May-July
Short-lobed Indian paintbrush <i>Castilleja hispida</i> ssp. <i>brevilobata</i>	--/--/4	Del Norte, Siskiyou, Oregon	Lower montane coniferous forest (serpentine, edges and openings)	April-July
Tracy's collomia <i>Collomia tracyi</i>	--/--/4	Del Norte, Humboldt, Lassen, Siskiyou, Tehama, Trinity	Lower montane coniferous forest	June-July
Alaska cedar <i>Cupressus nootkatensis</i>	--/--/4	Del Norte, Siskiyou, Oregon, widespread outside of California	Upper montane coniferous forest	Not Applicable
California lady's-slipper <i>Cypripedium californicum</i>	--/--/4	Butte, Del Norte, Humboldt, Marin [X], Plumas, Shasta, Siskiyou, Sonoma, Trinity, Oregon	Bogs and fens, Lower montane coniferous forest / serpentine seeps and streambanks	April-August
Mountain lady's-slipper <i>Cypripedium montanum</i>	--/--/4	Del Norte, Humboldt, Madera, Mendocino, Modoc, Mariposa, Plumas, Sierra, Siskiyou, San Mateo, Sonoma, Tehama, Trinity, Tuolumne, Oregon, Washington, widespread outside of California	Broadleafed upland forest, Lower montane coniferous forest	March-July
California pitcherplant <i>Darlingtonia californica</i>	--/--/4	Butte, Del Norte, Nevada, Plumas, Shasta, Sierra, Siskiyou, Trinity, Yuba, Oregon	Bogs and fens, Meadows / mesic, generally serpentine seeps	April-June
Oregon bleeding heart <i>Dicentra formosa</i> ssp. <i>oregana</i>	--/--/4	Del Norte, Humboldt, Siskiyou, Oregon	Lower montane coniferous forest (serpentine)	April-May
Siskiyou Mtns. willowherb <i>Epilobium rigidum</i>	--/--/4	Del Norte, Siskiyou, Oregon	Lower montane coniferous forest (serpentine)	July-August
Siskiyou daisy <i>Erigeron cervinus</i>	--/--/4	Del Norte, Siskiyou, Trinity, Oregon	Lower montane coniferous forest, Meadows	June-August
Ternate buckwheat <i>Eriogonum ternatum</i>	--/--/4	Del Norte, Siskiyou, Sonoma, Tehama, Oregon	Lower montane coniferous forest (serpentine)	June-August

TABLE 1-1 (con't')

SPECIAL-STATUS PLANTS OF DEL NORTE COUNTY

Species (Common/Scientific Name)	Status ^a Federal/State/CNPS	Habitat	Distribution	Flowering Period
Howell's fawn lily <i>Erythronium howellii</i>	--/--/4	Del Norte, Oregon	Lower montane coniferous forest	April-May
Oregon bedstraw <i>Galium oregonum</i>	--/--/3	Del Norte [?], Siskiyou [?], Oregon, Washington, and other states	Lower montane coniferous forest, North Coast coniferous forest	May-September
Howell's horkelia <i>Horkelia sericata</i>	--/--/4	Del Norte, Humboldt [?], Oregon	Chaparral, Lower montane coniferous forest / serpentinite, clay	May-July
California globe mallow <i>Iliamna latibracteata</i>	--/--/4	Del Norte, Humboldt, Oregon	North Coast coniferous forest (mesic)	June-July
Siskiyou iris <i>Iris bracteata</i>	--/--/4	Del Norte, Oregon	Lower montane coniferous forest (serpentinite)	May-June
Del Norte County iris <i>Iris innominata</i>	--/--/4	Del Norte, Oregon	Lower montane coniferous forest (serpentinite)	May-June
Hair-leaved rush <i>Juncus supiniformis</i>	--/--/4	Del Norte, Humboldt, Mendocino, Oregon, and other states	Bogs and fens, Marshes and Swamps (freshwater) / near coast	April-June
Del Norte pea <i>Lathyrus delnorticus</i>	--/--/4	Del Norte, Siskiyou, Oregon	Lower montane coniferous forest, North Coast coniferous forest / often serpentinite	June-July
Howell's lewisia <i>Lewisia cotyledon</i> var. <i>howellii</i>	SC/--/3	Del Norte, Humboldt, Shasta, Siskiyou, Trinity, Oregon	Chaparral, Cismontane woodland, Lower montane coniferous forest / rocky	April-July
Bolander's lily <i>Lilium bolanderi</i>	--/--/4	Del Norte, Humboldt, Siskiyou, Oregon	Chaparral, Lower montane coniferous forest / serpentinite	June-July
Kellogg's lily <i>Lilium kelloggii</i>	--/--/4	Del Norte, Humboldt, Oregon	Lower montane coniferous forest, North Coast coniferous forest / openings, roadsides	June-August
Vollmer's lily <i>Lilium pardalinum</i> ssp. <i>vollmeri</i>	--/--/4	Del Norte, Humboldt, Siskiyou, Oregon	Bogs and fens, Meadows (mesic)	July-August
Wiggins's lily <i>Lilium pardalinum</i> ssp. <i>wigginsii</i>	--/--/4	Del Norte, Siskiyou, Oregon	Bogs and fens, Lower montane coniferous forest, Meadows / mesic	June-August
Redwood lily <i>Lilium rubescens</i>	--/--/4	Del Norte, Humboldt, Lake, Mendocino, Napa, Santa Cruz [X], Shasta, Siskiyou, Sonoma, Trinity	Broadleaved upland forest, Chaparral, Lower montane coniferous forest, Upper montane coniferous forest / sometimes serpentinite	June-July
Purple-flowered Washington lily <i>Lilium washingtonianum</i> ssp. <i>purpurascens</i>	--/--/4	Del Norte, Humboldt, Siskiyou, Trinity, Oregon	Chaparral, Lower montane coniferous forest, Upper montane coniferous forest / serpentinite	June-August
Heart-leaved twayblade <i>Listera cordata</i>	--/--/4	Del Norte, Humboldt, Siskiyou, Nevada, Oregon, Washington, widespread outside of California	Bogs and fens, Lower montane coniferous forest, North Coast coniferous forest	March-July
Howell's lomatium <i>Lomatium howellii</i>	--/--/4	Del Norte, Siskiyou, Oregon	Chaparral, Lower montane coniferous forest / serpentinite	April-June

TABLE 1-1 (con't')

SPECIAL-STATUS PLANTS OF DEL NORTE COUNTY

Species (Common/Scientific Name)	Status ^a Federal/State/CNPS	Habitat	Distribution	Flowering Period
Mt. Eddy lupine <i>Lupinus lapidicola</i>	--/--/4	Del Norte, Humboldt, Siskiyou, Trinity	Lower montane coniferous forest, Subalpine coniferous forest, Upper montane coniferous forest / granitic or serpentinite, gravelly	July
Tracy's lupine <i>Lupinus tracyi</i>	--/--/4	Del Norte, Humboldt, Siskiyou, Trinity, Oregon	Upper montane coniferous forest	July
Northern bugleweed <i>Lycopus uniflorus</i>	--/--/4	Del Norte [?], Humboldt, Nevada, Plumas, Tuolumne, widespread outside of California	Bogs and fens, Marshes and Swamps	July-September
Purple onion grass <i>Melica spectabilis</i>	--/--/4	Del Norte, Humboldt, Mendocino, Oregon, widespread outside of California	Lower montane coniferous forest, Meadows, Upper montane coniferous forest / mesic	May-July
Howell's sandwort <i>Minuartia howellii</i>	--/--/4	Del Norte, Oregon	Chaparral, Lower montane coniferous forest / serpentinite	May-July
Indian pipe <i>Monotropa uniflora</i>	--/--/2	Del Norte, Humboldt, Oregon, Washington, widespread outside of California	Broadleaf upland forest, Northcoast coniferous forest	June-July
Awl-leaved navarretia <i>Navarretia subuligera</i>	--/--/4	Amador, Butte, Del Norte, Lake, Mendocino, Modoc, Napa [?], Shasta, Tehama, Oregon	Chaparral, Cismontane woodland, Lower montane coniferous forest / rocky, mesic	April-August
White-flowered rein orchid <i>Piperia candida</i>	--/--/4	Del Norte, Humboldt, Mendocino, Santa Cruz, Siskiyou, San Mateo, Sonoma, Trinity, Oregon, Washington, and other states	Lower montane coniferous forest, North Coast coniferous forest / sometimes serpentinite	May-August
California pinefoot <i>Pityopus californicus</i>	--/--/4	Del Norte, Fresno, Humboldt, Lake, Mendocino, Marin, Napa, Siskiyou, Sonoma, Tulare, Oregon	Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest, Upper montane coniferous forest	May-July
Nodding semaphore grass <i>Pleuropogon refractus</i>	--/--/4	Del Norte, Humboldt, Mendocino, Marin, Oregon, Washington, and other states	Lower montane coniferous forest, Meadows, North Coast coniferous forest, Riparian forest / mesic	May-August
Piper's blue grass <i>Poa piperi</i>	--/--/4	Del Norte, Siskiyou, Oregon	Chaparral, Lower montane coniferous forest / serpentinite, rocky	April-May
Timber blue grass <i>Poa rhizomata</i>	--/--/4	Del Norte, Siskiyou, Trinity, Oregon	Lower montane coniferous forest (serpentinite)	April-May
Del Norte pyrocoma <i>Pyrocoma racemosa</i> var. <i>congesta</i>	--/--/4	Del Norte, Oregon	Chaparral, Lower montane coniferous forest / serpentinite	August-September
White beaked-rush <i>Rhynchospora alba</i>	--/--/4	Del Norte [?], Lassen, Mendocino, Nevada [?], Plumas, Sonoma, Idaho, widespread outside of California	Bogs and fens, Marshes and Swamps (freshwater)	July-August
Trailing black currant <i>Ribes laxiflorum</i>	--/--/4	Del Norte [?], Humboldt, Oregon, Washington, widespread outside of California	North Coast coniferous forest	March-May
Snow dwarf bramble <i>Rubus nivalis</i>	--/--/2	Del Norte, Idaho, Oregon, and other states	North Coast coniferous forest	June-August
Del Norte willow <i>Salix delnortensis</i>	--/--/4	Del Norte, Siskiyou, Oregon	Riparian forest (serpentinite)	April-May

TABLE 1-1 (con't')

SPECIAL-STATUS PLANTS OF DEL NORTE COUNTY

Species (Common/Scientific Name)	Status ^a Federal/State/CNPS	Habitat	Distribution	Flowering Period
Peck's sanicle <i>Sanicula peckiana</i>	--/--/4	Del Norte, Oregon	Chaparral, Lower montane coniferous forest / serpentinite	March-June
Howell's saxifrage <i>Saxifraga howellii</i>	--/--/4	Del Norte, Siskiyou, Oregon	Cismontane woodland (sometimes serpentinite)	March-May
Pale yellow stonecrop <i>Sedum laxum ssp. flavidum</i>	--/--/4	Del Norte, Glenn, Humboldt, Shasta, Siskiyou, Tehama, Trinity	Broadleaved upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest / serpentinite or volcanic	May-July
Heckner's stonecrop <i>Sedum laxum ssp. heckneri</i>	--/--/4	Del Norte, Humboldt, Siskiyou, Trinity, Oregon	Lower montane coniferous forest, Upper montane coniferous forest / serpentinite or gabbroic	June-July
Rocky Mountain spike-moss <i>Selaginella densa var. scopulorum</i>	--/--/3	Del Norte, Siskiyou, Arizona, Idaho, New Mexico, Oregon, Utah, Washington, widespread outside of California	North Coast coniferous forest, Subalpine coniferous forest, Upper montane coniferous forest / decomposed granitic, rocky	August
Siskiyou Mtns. ragwort <i>Senecio macounii</i>	--/--/4	Del Norte, Siskiyou, Oregon, Washington, and other states	Lower montane coniferous forest (sometimes serpentinite, often in disturbed areas)	June-July
Glaucous tauschia <i>Tauschia glauca</i>	--/--/4	Del Norte, Humboldt, Trinity, Oregon	Lower montane coniferous forest (gravelly, serpentinite)	April-June
Slender false lupine <i>Thermopsis gracilis</i>	--/--/4	Del Norte, Humboldt, Shasta, Siskiyou, Trinity, Oregon	Chaparral, Cismontane woodland, Lower montane coniferous forest, Meadows, North Coast coniferous forest	March-July
Howell's clover <i>Trifolium howellii</i>	--/--/4	Del Norte, Humboldt, Siskiyou, Oregon	Lower montane coniferous forest, Meadows, Upper montane coniferous forest / mesic	July-August
Yellow triteleia <i>Triteleia crocea var. crocea</i>	--/--/4	Del Norte, Shasta, Siskiyou, Trinity, Oregon	Lower montane coniferous forest (granitic or serpentinite)	May-June
Siskiyou inside-out-flower <i>Vancouveria chrysantha</i>	--/--/4	Del Norte, Siskiyou, Oregon	Chaparral, Lower montane coniferous forest / serpentinite	June
Siskiyou false-hellebore <i>Veratrum insolitum</i>	--/--/4	Del Norte, Humboldt, Shasta, Siskiyou, Trinity, Oregon, Washington	Chaparral, Lower montane coniferous forest / clay	June-August

^a1A = List 1A species: presumed extinct in California.

1B = List 1B species: rare, threatened, or endangered in California and elsewhere.

2 = List 2 species: rare, threatened, or endangered in California but more common elsewhere.

3 = List 3 species: plants about which more information is needed to determine their status.

4 = List 4 species: plants of limited distribution.

Source: Skinner & Pavlik, 1994; Hickman, 1993; Natural Diversity Database, 1998.



SPECIAL-STATUS ANIMAL SPECIES

Special-status animals are species in the following categories:

- animals listed or proposed for listing as threatened or endangered under the Federal Endangered Species Act (50 CFR 17.11 [listed animals] and various notices in the Federal Register [proposed species]);
- animals that are candidates for possible future listing as threatened or endangered under the Federal Endangered Species Act (61 FR 40: 7596-7613, February 28, 1996);
- animal species of special management concern to the U.S. Fish and Wildlife Service (U.S. Fish and Wildlife Service 1995).
- animals that meet the definitions of rare or endangered under CEQA (State CEQA Guidelines, Section 15380);
- animals listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (14 CCR 670.5);
- animal species of special concern to the California Department of Fish and Game (Remsen 1978 [birds], Williams 1986 [mammals], and Jennings and Hayes 1994 [amphibians and reptiles]);
- animals fully protected in California (Cal. Fish and Game Code, Section 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]); and
- animals listed as sensitive by the local U.S. Forest Service region (Forest Service Manual 2670) or U.S. Bureau of Land Management resource area.

Special status animal species of Del Norte County are listed in Table 1-2 on the following page. Although not all of these species listed for the county would occur in the vicinity of Crescent City, those associated with coastal dune and scrub, grasslands, and coniferous forests may be found in the Crescent City area.

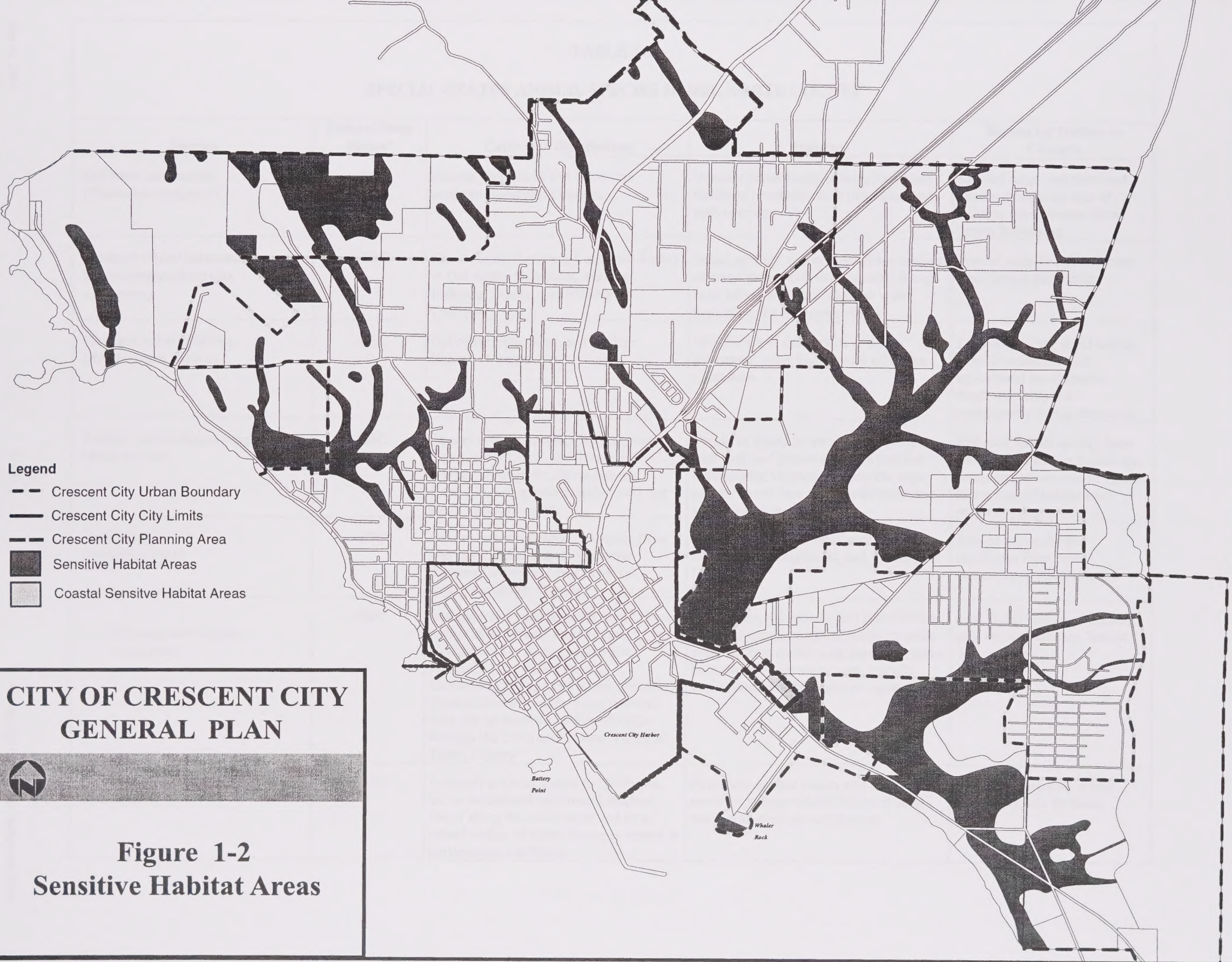


TABLE 1-2

SPECIAL-STATUS ANIMAL SPECIES IN DEL NORTE COUNTY

Species	Federal/State Status*	California Distribution	Habitats	Reason for Decline or Concern
Del Norte salamander (<i>Plethodon elongatus</i>)	-/SSC	Coastal portions of Del Norte and northern Humboldt Counties	Humid coastal forests among rocks and rubble of riverbeds, road fills, talus, and rock outcrops	Limited range and restricted habitat; temporary loss of suitable microclimate from timber harvesting
Southern torrent salamander (<i>Rhyacotriton olympicus variegatus</i>)	E/SSC	Occurs in northwestern California forests in Del Norte, Humboldt, western Siskiyou, Trinity, and Mendocino Counties	Seeps, springs, and high-gradient reaches of small forested streams, usually found in or adjacent to cool, shallow water beneath rocks or organic debris	Loss of suitable microclimate from timber harvesting
Northern red-legged frog (<i>Rana aurora aurora</i>)	-/SSC	Del Norte, Humboldt, and western Siskiyou Counties	Usually found near ponds or other permanent water bodies with extensive vegetation	Loss of breeding pond habitat from urbanization and agricultural development; direct mortality from automobiles during migration
Foothill yellow-legged frog (<i>Rana boylei</i>)	-/SSC	Occurs in the Klamath, Cascade, north Coast, south Coast, and Transverse Ranges; through the Sierra Nevada foothills up to approximately 6,000 feet south to Kern County	Creeks or rivers in woodlands or forests with rock and gravel substrate and low overhanging vegetation along the edge; usually found near riffles with rocks and sunny banks nearby	Reduced habitat quality from alteration of stream hydrology, predation by non-native aquatic fauna, loss of habitat from urban development
Tailed frog (<i>Ascaphus truei</i>)	-/SSC	Occurs in northwestern California from Del Norte County south to central Sonoma County and east as far as southwest Shasta County	Cool, perennial, swiftly flowing streams in redwood, Douglas-fir, and yellow pine forests	Altered microclimate conditions from timber harvesting in riparian areas
(<i>Clemmys marmorata marmorata</i>)	-/SSC	In California, range extends from Oregon border of Del Norte and Siskiyou Counties south along coast to San Francisco Bay, inland through Sacramento Valley, and on the western slope of Sierra Nevada; range overlaps with that of southwestern pond turtle through the Delta and Central Valley to Tulare County	Woodlands, grasslands, and open forests; occupies ponds, marshes, rivers, streams, and irrigation canals with muddy or rocky bottoms and with watercress, cattails, water lilies, or other aquatic vegetation	Loss and alteration of aquatic and wetland habitats; habitat fragmentation
Common loon (<i>Gavia immer</i>)	--/SSC	Primarily a winter visitor to California, but an occasional year-round resident; found along the entire coast and large inland bodies of water; formerly nested in northeastern California	Nearshore coastal waters and bays; less common at large inland bodies of deep water with productive fisheries	Human disturbance at nest sites, especially by boats

TABLE 1-2 (con't')

SPECIAL-STATUS ANIMAL SPECIES IN DEL NORTE COUNTY

Species	Federal/State Status*	California Distribution	Habitats	Reason for Decline or Concern
Tidewater Goby (<i>Eucyclogobius newberryi</i>)	E/-	California coast from Agua Hedionda Lagoon, San Diego County to the mouth of the Smith River.	Estuarine habitats	Loss or degradation of coastal saltwater marsh habitat
Coastal Cutthroat trout (<i>Oncorhynchus clarki clarki</i>)	SC/SSC	Elk river to the Oregon border	Cool clear water with spawning gravel and cover structures	Habitat alteration or degradation
Steelhead trout (<i>Oncorhynchus mykiss</i>)	PE(*)/SSC	Klamath and Trinity Rivers	Cool clear water with spawning gravel and cover structures	Habitat alteration or degradation
Coho salmon (<i>Oncorhynchus kisutch</i>)	PT/SSC	Cape Blanco, Oregon to Punta Gorda, California	Cool clear water with spawning gravel and cover structures	Habitat degradation
Green sturgeon (<i>Acipenser medirostris</i>)	SC/SSC	Klamath and Sacramento Rivers	Cold, clear water with spawning gravel and cover structures	Over harvesting or poaching and modification of spawning habitat
Klamath river lamprey (<i>Lampetra similis</i>)	-/SSC	Upper Klamath Lake and Upper Klamath River	Backwaters of large rivers	Habitat degradation
Common Loon (<i>Gavia immer</i>)	-/SSC	Primarily a winter visitor to California, but an occasional year-round resident; found along the entire coast and large inland bodies of water; formerly nested in northeastern California	Near shore, coastal waters and bays; less common at large inland bodies of deep water with productive fisheries	Human disturbance at nest sites, especially by boats
Brown pelican (<i>Pelecanus occidentalis</i>)	E/E	Present along the entire coastline, but does not breed north of Monterey County; extremely rare inland	Typically in littoral ocean zones, just outside the surf line; nests on offshore islands	Human disturbance at breeding colonies; natural fluctuations in prey base populations during breeding season; pesticide contamination

TABLE 1-2 (con't')

SPECIAL-STATUS ANIMAL SPECIES IN DEL NORTE COUNTY

Species	Federal/State Status*	California Distribution	Habitats	Reason for Decline or Concern
Double-crested cormorant (<i>Phalacrocorax auritus</i>)	--/SSC	Winters along the entire California coast and inland over the Coast Ranges into the Central Valley from Tehama County to Fresno County; a permanent resident along the coast from Monterey County to San Diego County, along the Colorado River, Imperial, Riverside, Kern, and King Counties, and the islands off San Francisco; breeds in Siskiyou, Modoc, Lassen, Shasta, Plumas, and Mono Counties; also breeds in the San Francisco Bay Area and in Yolo and Sacramento Counties	Rocky coastlines, beaches, inland ponds, and lakes; needs open water for foraging, and nests in riparian forests or on protected islands, usually in snags	Loss of coastal and riparian breeding sites; human disturbance
Aleutian Canada goose (<i>Branta canadensis leucopareia</i>)	T/--	The entire population winters in Butte Sink, then moves to Los Banos, Modesto, the Delta, and East Bay reservoirs; stages near Crescent City during spring before migrating to breeding grounds	Roosts in large marshes, flooded fields, stock ponds, and reservoirs; forages in pastures, meadows, and harvested grainfields; corn is especially preferred	Introduction of predators on breeding grounds; loss of traditional wintering habitat
Harlequin duck (<i>Histrionicus histrionicus</i>)	-/SSC	May still nest in very small numbers in Calaveras County and eastern Amador and Placer Counties; winters on the coast from Del Norte County to central San Luis Obispo County	Turbulent mountain streams in summer and rough coastal waters in winter; forages by diving along rocky shorelines	Human disturbance and shooting on breeding grounds; dams on nesting streams
(<i>Pandion haliaetus</i>)	--/SSC	Nests along the north coast from Marin County to Del Norte County, east through the Klamath and Cascade Ranges, and the upper Sacramento Valley; important inland breeding populations at Shasta Lake, Eagle Lake, and Lake Almanor, and small numbers elsewhere south through the Sierra Nevada; winters along the coast from San Mateo to San Diego County	Nests in snags or cliffs or other high, protected sites near the ocean, large lakes, or rivers with abundant fish populations	Vulnerable to human disturbance at nest sites; pesticide contamination; breeding range and populations increasing in many areas

TABLE 1-2 (con't')

SPECIAL-STATUS ANIMAL SPECIES IN DEL NORTE COUNTY

Species	Federal/State Status*	California Distribution	Habitats	Reason for Decline or Concern
Bald eagle (<i>Haliaeetus leucocephalus</i>)	E/E	Nests in Siskiyou, Modoc, Trinity, Shasta, Lassen, Plumas, Butte, Tehama, Lake, and Mendocino Counties and in the Lake Tahoe Basin; reintroduced into central coast; winter range includes the rest of California, except the southeastern deserts, very high altitudes in the Sierras, and east of the Sierra Nevada south of Mono County; range expanding	In western North America, nests and roosts in coniferous forests within 1 mile of a lake, a reservoir, a river, or the ocean	Nest sites vulnerable to human disturbance; pesticide contamination
Northern harrier (<i>Circus cyaneus</i>)	--/SSC	Throughout lowland California; has been recorded in fall at high elevations	Grasslands, meadows, marshes, and seasonal and agricultural wetlands providing tall cover	Loss of habitat to agricultural and urban development
Sharp-shinned hawk (<i>Accipiter striatus</i>)	--/SSC	Permanent resident on the Sierra Nevada, Cascade, Klamath, and north Coast Ranges at mid-elevations, as well as along the coast in Marin, San Francisco, San Mateo, Santa Cruz, and Monterey Counties; winters over the rest of the state except very high elevations	Dense-canopy ponderosa pine or mixed-conifer forest and riparian habitats	Human disturbance at nest sites; pesticide contamination; timber harvesting near nesting sites
Cooper's hawk (<i>Accipiter cooper</i>)	--/SSC	Throughout California except high altitudes in the Sierra Nevada; winters in the Central Valley, southeastern desert regions, and plains east of the Cascade Range; permanent residents occupy the rest of the state	Nests primarily in riparian forests dominated by deciduous species; also nests in densely canopied forests from digger pine-oak woodland up to ponderosa pine; forages in open woodlands	Human disturbance at nest sites; loss of riparian habitats, especially in the Central Valley; pesticide contamination
Northern goshawk (<i>Accipiter gentilis</i>)	-/SSC	Permanent resident on the Klamath and Cascade Ranges, on the north Coast Ranges from Del Norte to Mendocino Counties, and in the Sierra Nevada south to Kern County; winters in Modoc, Lassen, Mono, and northern Inyo Counties; rare in southern California	Nests and roosts in older stands of red fir, Jeffrey pine, and lodgepole pine forests; hunts in forests and in forest clearings and meadows	Loss of nesting habitat and disturbance of nest sites
Golden eagle (<i>Aquila chrysaetos</i>)	PR/SSC, FP	Foothills and mountains throughout California; uncommon non-breeding visitor to lowlands such as the Central Valley	Cliffs and escarpments or tall trees for nesting; annual grasslands, chaparral, and oak woodlands with plentiful medium and large-sized mammals for prey	Habitat loss to urbanization; vulnerable to disturbance at nest sites

TABLE 1-2 (con't')

SPECIAL-STATUS ANIMAL SPECIES IN DEL NORTE COUNTY

Species	Federal/State Status*	California Distribution	Habitats	Reason for Decline or Concern
Merlin (<i>Falco columbarius</i>)	--/SSC	Does not nest in California; rare but widespread winter visitor to the Central	Forages along coastlines, open grasslands, savannas, and woodlands;	Unclear; possible chemical contamination; illegal take of
	American peregrine falcon	E/E	Permanent resident on the north and south Coast Ranges; may summer on the	Nests and roosts on protected ledges of high cliffs, usually
(<i>Falco mexicanus</i>)	--/SSC	Found as permanent resident on the south Coast, Transverse, Peninsular, and northern Cascade Ranges; the southeastern deserts; Inyo-White Mountains; Modoc, Lassen, and Plumas Counties; and the foothills surrounding the Central Valley; winters in the Central Valley, along the coast from Santa Barbara County to San Diego County, and in Marin, Sonoma, Humboldt, Del Norte, and Inyo Counties	Cliffs or escarpments for nesting; adjacent dry, open terrain or uplands, marshes, and seasonal marshes for foraging	Possible pesticide contamination; robbing of eyries by falconers and illegal shooting; human disturbance at nest site
Western snowy plover (<i>Charadrius alexandrius nivosus</i>)	T/SSC (Coastal)	Winters along the coast from Del Norte County to San Diego County, breeding sites within this range are very limited	Coastal beaches above the normal high tide limit with wood or other debris for cover	Human disturbance on nesting beaches; feral animal and non-native predator disturbance; loss of habitat
	--/SSC (Inland)	Nests at inland lakes throughout northeastern, central, and southern California	Inland shores of salt ponds and alkali or brackish inland lakes	
Long-billed curlew (<i>Numenius americanus</i>)	--/SSC	Nests in northeastern California in Modoc, Siskiyou, and Lassen Counties; winters along coast or in interior valleys west of Sierra Nevada	Nests at high-elevation grasslands adjacent to lakes or marshes in migration and winter; frequents coastal beaches and mudflats or interior grasslands and agricultural fields	Loss of wetland and grassland habitats to urbanization and agriculture

TABLE 1-2 (con't')

SPECIAL-STATUS ANIMAL SPECIES IN DEL NORTE COUNTY

Species	Federal/State Status*	California Distribution	Habitats	Reason for Decline or Concern
California gull (<i>Larus californicus</i>)	--/SSC	Winters along the Pacific coast from British Columbia to Mexico; in the interior of California, it frequents the Sacramento River Delta and Central Valley, the plains east of the Cascade Range, northern Plumas County and southwestern Mono County, the Lake Tahoe Basin, the Transverse and Peninsular Ranges, and the Salton Sea; nests at Great Basin lakes and at south San Francisco Bay; largest California breeding colony is at Mono Lake	Forages in a variety of habitats, including beaches, mudflats, freshwater and alkali marshes, rivers, lakes, and urban areas; nests colonially on islands isolated from mainland predators	Exposure of nesting islands at Mono Lake attributable to declining water levels; wintering populations are not considered sensitive and have increased in the past 50 years
Marbled murrelet (<i>Brachyramphus marmoratus</i>)	T/E	Nesting sites from the Oregon border to Eureka and between Santa Cruz and Half Moon Bay; winters in nearshore and offshore waters along the entire California coastline	Mature, coastal coniferous forests for nesting; nearby coastal water for foraging; nests in conifer stands greater than 150 years old and may be found up to 35 miles inland; winters on subtidal and pelagic waters often well offshore	Loss of old growth nesting habitat; drowning from entanglement in gill netting; oil-spill threats; potential increase in egg and nesting mortality from fragmentation along the entire coastline
Western burrowing owl (<i>Athene cunicularia hypugea</i>)	-/SSC	Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas; rare along south coast	Rodent burrows in sparse grassland or desert habitats	Loss of habitat; human disturbance at nesting burrows
Northern spotted owl (<i>Strix occidentalis caurina</i>)	T/--	A permanent resident throughout its range; found in the north Coast, Klamath, and western Cascade Ranges, from Del Norte County to Marin County	Dense, old growth forests dominated by conifers, with topped trees or oaks available for nesting crevices	Loss of nesting habitat

TABLE 1-2 (con't')

SPECIAL-STATUS ANIMAL SPECIES IN DEL NORTE COUNTY

Species	Federal/State Status*	California Distribution	Habitats	Reason for Decline or Concern
(<i>Asio flammeus</i>)	--/SSC	Permanent resident along the coast from Del Norte County to Monterey County although very rare in summer north of San Francisco Bay, in the Sierra Nevada north of Nevada County, in the plains east of the Cascades, and in Mono County; small, isolated populations also nest in the Central Valley; winters on the coast from San Luis Obispo County to San Diego County, the Central Valley from Tehama County to Kern County, the eastern Sierra Nevada from Sierra County to Alpine County, the Channel Islands, and Imperial County	Freshwater and saltwater marshes, lowland meadows, and irrigated alfalfa fields; needs dense tules or tall grass for nesting and daytime roosts	Loss of wetland and grassland habitats to agriculture and urban development
Vaux's swift (<i>Chaetura vauxi</i>)	--/SSC	Coastal belt from Del Norte County south to Santa Cruz County; also nests rarely in mid-elevation forests of the Sierra Nevada	Nests in hollow, burned-out tree trunks in large conifers; most other activities are conducted in the air	Reduction in the number of suitable nest sites from logging and fire suppression
Purple martin (<i>Progne subis</i>)	--/SSC	Nests in Sacramento; uncommon or absent elsewhere in the Central Valley; breeds locally in coastal areas from Del Norte County south to Santa Barbara County; rare in southern California	Abandoned woodpecker holes in valley oak and cottonwood forests for nesting; also nests in vertical holes in elevated freeways and highway bridges; open areas required for feeding	Competition for nest sites from European starlings; loss of riparian habitat; loss of nesting habitat
Black-capped chickadee (<i>Parus atricapillus</i>)	--/SSC	Extreme northwestern California	Conifer forests, riparian	Small local distribution in California, more common elsewhere within range
Ruffed grouse (<i>Bonasa umbellus</i>)	--/SSC	Extreme northwestern California	Conifer forests, riparian	Loss of habitat from logging
Loggerhead shrike (<i>Lanius ludovicianus</i>)	--/SSC	Resident and winter visitor in lowlands and foothills throughout California; rare on coastal slope north to Mendocino County, occurring only in winter	Prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches	Loss of habitat and pesticide use; still widespread

TABLE 1-2 (con't')

SPECIAL-STATUS ANIMAL SPECIES IN DEL NORTE COUNTY

Species	Federal/State Status*	California Distribution	Habitats	Reason for Decline or Concern
California yellow warbler (<i>Dendroica petechia brewsteri</i>)	--/SSC	Nests over all of California except the Central Valley, the Mojave Desert region, and high altitudes in the Sierra Nevada; winters along the Colorado River and in parts of Imperial and Riverside Counties; two small permanent populations in San Diego and Santa Barbara Counties	Nests in riparian areas dominated by willows, cottonwoods, sycamores, or alders or in mature chaparral; may also use oaks, conifers, and urban areas near streamcourses	Loss of riparian breeding habitats; nest parasitism by brown-headed cowbirds
Yellow-breasted chat (<i>Icteria virens</i>)	--/SSC	Uncommon migrant in California; nests in a few locations with appropriate habitat such as Sweetwater and Weber Creeks, El Dorado County, Pit River, Shasta County, Russian River, Sonoma County, and Little Lake Valley, Mendocino County; and Putah Creek, in Yolo County	Nests in dense riparian habitats dominated by willows, alders, Oregon ash, tall weeds, blackberry vines, and grapevines	Loss of riparian breeding habitat
Bank Swallow (<i>Riparia riparia</i>)	-/T	The state's largest remaining breeding populations are along the Sacramento River from Tehama County to Sacramento County and along the Feather and lower American River	Colonial nester, nests primarily in riparian and other lowland habitats west of the desert	Unknown
Rhinoceros auklet (<i>Cerorhinca monocerata</i>)	-/SSC	California off-shore islands	Known to nest on only two off-shore islands along the California coast	Unknown
Tufted puffin (<i>Fratercula cirrhata</i>)	PT/SSC	California off-shore islands	Open-ocean bird; nest along the coast on islands, islets, or (rarely) mainland cliffs	Unknown
Fork-tailed storm petrel (<i>Oceanodroma furcata</i>)	-/SSC	California off-shore islands	Colonial nester on small, offshore islets. Forages over the open ocean, usually well off-shore.	Unknown
Townsend's western big-eared bat (<i>Plecotus townsendii townsendii</i>)	C2/SSC	Coastal regions from Del Norte County south to Santa Barbara County	Roosts in caves, tunnels, mines, and dark attics of abandoned buildings; very sensitive to disturbances and may abandon a roost after onsite visit	Decline unclear; possible human disturbance to roost sites
(<i>Eumops perotis californicus</i>)	SC/SSC	the distribution of this bat species is far outside the county area- suggest deleting this species from the table	Unknown	Unknown

TABLE 1-2 (con't')

SPECIAL-STATUS ANIMAL SPECIES IN DEL NORTE COUNTY

Species	Federal/State Status*	California Distribution	Habitats	Reason for Decline or Concern
Western red bat (<i>Lasurus blossevillei</i>)	SC/SSC	Our biologists are unable to provide information on this species. We may want to double check the common or scientific name	Unknown	Unknown
Pallid bat <i>Antrozous pallidus</i>	-/SSC	Sierra Nevada and Coast Ranges and the Central Valley	Found in grasslands, scrublands, woodlands & forests from sea level up through mixed conifer forests	Potential habitat loss
White-footed vole (<i>Arborimus albipes</i>)	-/SSC	Inhabits the western halves of Del Norte and Humboldt Counties	Occurs from sea level to 3,500 feet in humid coastal conifer forests, along small streams	Potential habitat loss due to timber harvesting
Red tree vole (<i>Phenacomys longicaudus</i> (<i>Arborimus</i>))	--/SSC	Occurs along the north Coast Ranges from Sonoma County to the Oregon border	Inhabits old growth forests of Douglas-fir, redwood, or montane hardwood-conifer species	Potential habitat loss due to timber harvesting
Ringtail (<i>Basariscus astutas</i>)	CSC/FP	Sierra Nevada and Coast Ranges and the Central Valley; upper and middle portions of the Sacramento River, Feather River, and Bobelaine Sanctuary; potentially occurs in riparian woodlands in Chico area	Riparian forests, chaparral, brushlands, oak woodlands, and rocky hillsides	Loss and fragmentation of lowland riparian habitat
Pacific fisher (<i>Martes pennanti pacifica</i>)	-/SSC	Coastal mountains from Del Norte County to Sonoma Counties, through Cascades to Lassen County; south in Sierra Nevada to Kern County	Mixed conifer habitats with high overstory cover; preference for riparian areas and other ecotonal habitats	Altered habitat from logging; historic trapping
Wolverine (<i>Gulo Gulo</i>)	-/T	Klamath and Cascade Ranges south through the Sierra Nevada to Tulare County	Sighted in a variety of habitats from 1,600 to 14,200 feet; most common in open terrain above timberline and subalpine forests	Reason for decline unclear; altered habitat from logging and recreation activities
Humboldt marten (<i>Martes americana humboldtensis</i>)	-/SC	Uncommon to common resident of North Coast regions	Mixed evergreen forests with a high percentage of canopy crown closure	Altered habitat
American badger (<i>Taxidea taxus</i>)	--/SSC	Occurs statewide except for the northwestern corner in Del Norte County and parts of Humboldt and Siskiyou Counties	Uses open areas with scattered shrubs and trees for cover and loose soil for digging	Loss of habitat to agricultural and urban development

TABLE 1-2 (con't')

SPECIAL-STATUS ANIMAL SPECIES IN DEL NORTE COUNTY

Species	Federal/State Status*	California Distribution	Habitats	Reason for Decline or Concern
* Status definitions: Federal E = listed as endangered under the Federal Endangered Species Act. T = listed as threatened under the Federal Endangered Species Act. PE = proposed for listing as endangered under the Federal Endangered Species Act. PR = protected under the Bald Eagle Protection Act. C2 = Category 2 candidate for Federal listing. Category 2 includes species for which USFWS has some biological information indicating that listing may be appropriate but for which further biological research and field study are usually needed to clarify the most appropriate status. Species that are possibly extinct are indicated with an asterisk (*). Category 2 species are not necessarily less rare, threatened, or endangered than Category 1 species or listed species; the distinction relates to the amount of data available and is therefore administrative, not biological. -- = no designation. State E = listed as endangered under the California Endangered Species Act. FP = fully protected under the California Fish and Game Code. SSC = species of special concern. -- = no designation.				
Source: Natural Diversity Database, 1998.				



1.5 RECREATION RESOURCES

The Crescent City area provides opportunities for hiking, bicycling, beach combing, fishing, camping, surfing, boating, and many other activities. Table 1-3 and Figure 1-3 shows many of these recreational resources. There are 192 acres of parkland serving nearly 4,500 residents within the city limits, which results in a service level ratio of 48 acres per 1,000 residents. In addition, the Crescent City area contains several public artworks and performance centers. Located on the Pacific coast, the city lies amidst broad beaches, coastal dunes, and the Crescent City Harbor, with mountains and redwood forests providing an impressive backdrop.

The following lists the major recreational features located within the city and the unincorporated Crescent City area:

City Parks and Recreation Facilities

- Peterson Park
- Brother Jonathan Park and Vista Point
- Tetrapod Area
- Beach Front Park
- Cultural Center
- Public Swimming Pool
- Marine Mammal Center
- Improved Beach Access at 4th, 5th, and 7th Streets
- Harbor-City Bicycle Path
- Citizens Dock and Launching Facilities
- B Street Pier

County Parks and Recreation Facilities

- Florence Keller Regional Park
- Never Dying Redwood Tree Historical Site
- Point St. George Fishing Access: Historical Site and Lighthouse Viewing
- Pebble Beach Access and Park
- Bertsch Park (undeveloped)
- Recreational Gym and Fields
- Elk Creek (currently undeveloped)
- Batter Point Vista and Lighthouse
- Del Norte County Historical Museum
- County Fairgrounds
- McNulty Home
- Pioneer Church Site
- Preston Island
- Whaler Island



Camping and Recreation Vehicle Parks

- Shoreline RV
- Bayside RV
- Harbor Anchorage
- Sunset Harbor
- Forest Village

Several camping areas also contribute to the city's varied recreational experience. At the present time (May 1998), Crescent City provides camping and RV access at four privately managed facilities shown above, and at the Shoreline RV park, a public facility. All facilities are within the city limits except the Forest Village camping area, which is approximately ½ mile from the city limits. A KOA campground and the Rambling Rose camping area are located outside the city area.

Two golf courses are located outside of the city and are available for use by tourists.

In addition to the aforementioned facilities, residents and visitors to the area use many of the Federal, State, and County recreational sites. Many of these areas are located in or within a short drive of the city, such as Redwood National Park, Six Rivers National Forest, Jedediah Smith Redwoods State Park, Lake Earl, Point Saint George, Mill Creek Campground, Dead Lake Sand Dunes, the County Fairgrounds, and the Smith and Klamath River.

PRIVATE RECREATION

In addition to the local public recreation facilities, there are numerous private recreation providers operating within the city. Private businesses are able to offer Crescent City residents and visitors a range of recreation-oriented services and opportunities. Most visitors to the area require lodging, meals, supplies, and other services that are typically provided by local businesses. The following is a representative list of recreation facilities and activities offered by private business that may be found in the city:

- hotels and motels;
- Point St. George Fishing Access;
- McNulty Home;
- restaurants and local food stores;
- fishing equipment and bait suppliers;
- recreation equipment rental;
- museums and tourist attractions;
- whale watching trips;
- souvenir and local crafts shops;
- boat rentals; and
- golf course.

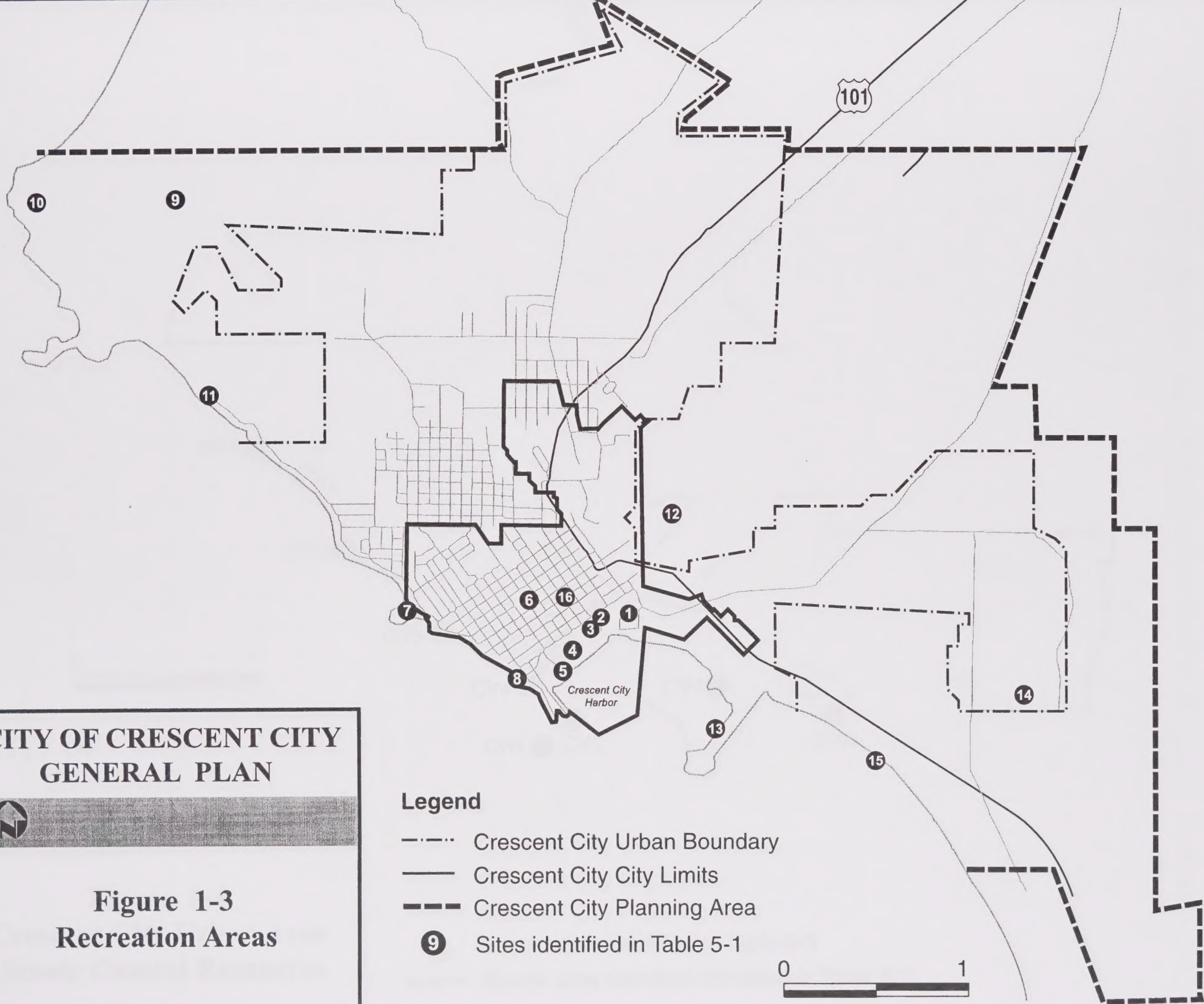
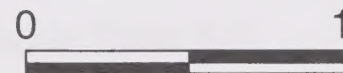
CITY OF CRESCENT CITY GENERAL PLAN

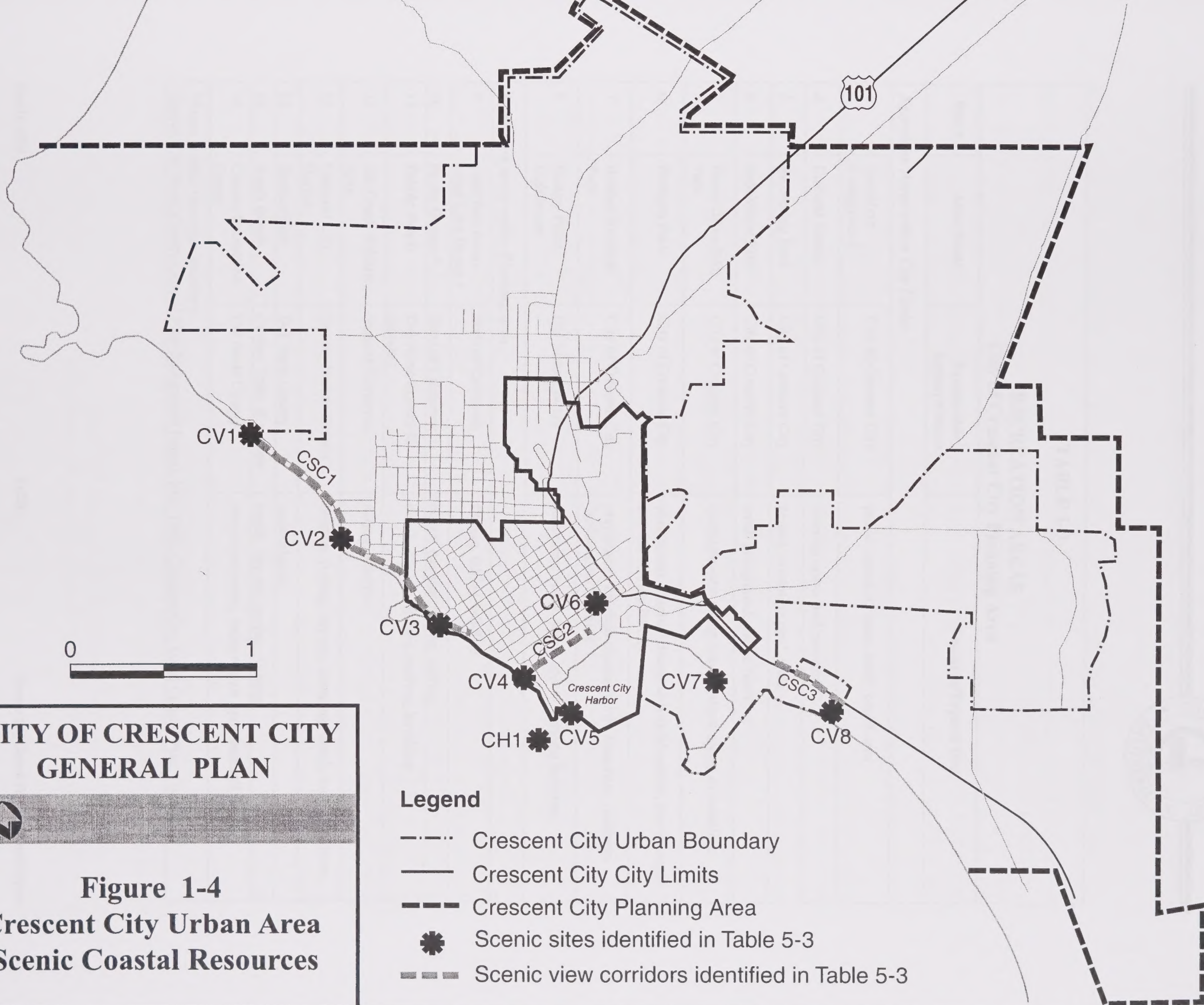


**Figure 1-3
Recreation Areas**

Legend

- Crescent City Urban Boundary
- Crescent City City Limits
- - - Crescent City Planning Area
- ⑨ Sites identified in Table 5-1





CITY OF CRESCENT CITY GENERAL PLAN



Figure 1-4
Crescent City Urban Area
Scenic Coastal Resources

Legend

-  Crescent City Urban Boundary
-  Crescent City City Limits
-  Crescent City Planning Area
-  Scenic sites identified in Table 5-3
-  Scenic view corridors identified in Table 5-3



TABLE 1-3
RECREATION AREAS
City of Crescent City Planning Area

Site #	Area Name	Responsible Agency/Owner	Features/Type of Use
<i>Recreation Areas within City Limits</i>			
1	Shoreline Campground	City of Crescent City	public access to coast, sandy beach area
2	Cultural Center	City of Crescent City	meeting center and museum
3	Swimming Pool	City of Crescent City	heated swimming pool, slide
4	Beachfront Park	City of Crescent City	small playground, picnic facilities
5	Howe Drive Bike Path	City of Crescent City	complete view of the ocean, lateral access of coastline
6	Peterson Park	City of Crescent City	playground, baseball diamond with bleachers, tennis court, and community facility
7	Brother Jonathan Park	City of Crescent City	playground, baseball diamond with bleachers, restroom facilities, and parking
8	Battery Point Lighthouse	Del Norte County	panoramic vistas, beach access, parking facilities
<i>Recreation Areas within Planning Area</i>			
9	Lake Earl Area - Dead Lake Dunes *	State of California	fishing, hiking, wildlife
10	Pt. St. George *	State of California	beach, day use, fishing, surfing
11	Pebble Beach	Del Norte County & private	beach, day use, fishing, surfing, kayaking
12	Elk Creek Wildlife Area	State of California	hiking, wildlife
13	Crescent City Harbor	County Harbor District	boating, fishing, day use, camping, beach, tourist facilities
14	Bertsch Park	Del Norte County	undeveloped
15	South Beach	County, State, & private	beach, day use, surfing, fishing
16	County Recreation Center	Del Norte County	recreation center, indoor court gym, baseball fields
*Areas outside the urban boundary. Source: Del Norte County General Plan Background Report, May 1998; Crescent City Local Coastal Plan, 1986.			



1.6 SCENIC RESOURCES

The City of Crescent City area has an abundance of visual resources. The Pacific Ocean and the Battery Point Lighthouse are the most significant scenic features to be found.

Approximately seventy-five percent of the land between the first road and the ocean within the Crescent City urban area is owned by local government agencies, providing continued opportunities for the enjoyment of these scenic areas by the public.

COASTAL RESOURCES SURVEY

City Staff conducted a review of existing scenic coastal resources in the coastal Crescent City urban area as a part of the General Plan Update process. City Staff incorporated into this document much of the existing conditions information (e.g., scenic resource locations) from the City of Crescent City and Del Norte County certified (1984) Local Coastal Plans. Additionally, City Staff consulted the State Department of Parks and Recreation California Coastline Preservation and Recreation Plan and conducted a field review of the Coastal Zone areas to update the information reflected in these Plans. Criteria for the identification of coastal areas of particular landform, vegetation, or transition significance included:

1. Broad views of special natural interest to the general public (e.g., Pacific Ocean, off-shore rocks, seacliffs, territorial views of State or National Parks);
2. Broad views of distinctive scenes resulting from unique contrasts or diversity between land use and/or landscape patterns (e.g., harbor activities and ocean, urban development and landscape;
3. Views of special cultural features (e.g., historical structures, significant public works structures, unique maritime settings).

Table 1-3 and Figure 1-3 reflect the results of these reviews. Indicated are coastal vista points which consist of specific locations where scenic resources may be viewed from a stationary setting, coastal scenic view corridors along which a pedestrian or vehicle traveler may view scenic resources, and the Battery Point Lighthouse which is a significant coastal historic resource.

After review of the California Department of Parks and Recreation's California Coastline Preservation and Recreation Plan, City Staff determined that there are no areas within the Planning Area classified as Highly Scenic Resources.

Additional Unique Scenic Resources

City Gateways

While not scenic in the same manner as open coastal vistas, three developed Crescent City urban commercial land use areas have been identified as entrances to the city. These areas have, or have the potential for, improvements such as special signage, landscaping, and/or undergrounding of utilities that may serve as welcoming gateways into the community. They are as follows:

- Highway 101 South between Anchor Way and Elk Creek
- Highway 101 North between Parkway Drive and Cooper Street



- Front Street between “N” Street and “A” Street

Scenic Drives

The 1976 City/County General Plan propose the creation of a special marked driving route which visitors can follow to visit scenic areas and spend additional time in the community. With more recent development and regulations, the exact location of the route requires adjustment however within the Crescent City urban area, an updated route can be divided into two segments:

- Harbor Drive - from Anchor Way through the harbor to Highway 101 to Front Street to the B Street Pier/Battery Point Lighthouse.
- Lighthouse-to-Lighthouse Drive - from Battery Point Lighthouse to 5th Street west to Pebble Beach Drive and north to the Washington Boulevard/Pt. St. George area.

Historic Structures

Within the Coastal Zone the City has identified Battery Point Lighthouse as a structure of historical significance. Older structures of local historic or architectural interest can also be found outside the Coastal Zone in the central city area, though none have nearly the same significance as the lighthouse.

Development Standards

The City currently (January 2001) has standards which affect the overall visual impact of development/redevelopment in designated residential, commercial, and industrial areas. These development standards include: zoning height and yard standards for residential and commercial areas; a sign ordinance; and landscaping/tree ordinance requirements. The City also has a LCP certified Architectural Review Implementation Program which implements these standards and thereby assures compatibility and harmony in the appearance of city neighborhoods.

The City has no existing (i.e., as of 2000) General Plan/LCP policies that require new development lighting to be shielded to minimize glare impacts. Additionally, the City does not have an existing (November 2000) light pollution ordinance. It has, however, conditioned new development projects to provide shielded, downward lighting. Biological studies for the Marhoffer Creek/Pt. St. George areas indicate that lighting should be directed away from rocky shoreline areas to minimize impacts upon marine habitats. Unlike the incorporated area, unincorporated sections of the greater Crescent City Urban Area are not currently provided with public street lights.



TABLE 1-4
SCENIC RESOURCES
CRESCENT CITY URBAN AREA

Site	Site Name	View Location	Existing/Compatible Site Uses	Key Viewshed Characteristics
COASTAL VISTA POINTS				
CV1	Marhoffer Creek Parking Area	West side of Pebble Beach Drive	public parking, beach access, beach activities, slope protection, recreational trail, safety rails and signs	ocean views, off-shore rock views
CV2	Garden Vista/Pebble Beach Fishing Access	West side of Pebble Beach Drive	public parking, public access, picnicking, tidepool and beach activities, slope protection, recreational trail, safety rails and signs	ocean views, off-shore rock views
CV3	Brother Jonathan Vista	West side of Pebble Beach Drive	public parking, picnicking, slope protection, recreational trail, safety rails and signs	ocean views, off-shore rock views, Battery Point Lighthouse view
CV3	Battery Point	South of public parking lot	public parking, public access, recreational trail, visitor facilities, breakwater, picnicking, safety rails and signs	ocean views; off-shore rock views; Harbor activities view; Battery Point Lighthouse, B St Pier, and breakwater views
CV5	B St Pier	All directions	public parking, pier uses, visitor facilities, safety rails and signs	ocean views, off-shore rock views Harbor activities view, Park/downtown views, Battery Pt Lighthouse views, breakwater views
CV6	Elk Creek Bridge	Southwest of Highway 101	highway and drainage uses, recreational trails and trail crossings, bank protection, visitor facilities, park uses, safety rails and signs	creek view, Harbor development/park uses views
CV7	Fishermans Memorial @Citizens Dock	West of public parking lot/memorial	public parking, harbor/dock uses	Harbor activities view
CV8	DFG Access @ South Beach	West of Highway 101	public parking, recreational trail, beach activities, visitor facilities	ocean views



TABLE 1-4

**SCENIC RESOURCES
CRESCENT CITY URBAN AREA**

Site	Site Name	View Location	Existing/Compatible Site Uses	Key Viewshed Characteristics
COASTAL SCENIC VIEW CORRIDORS				
CSC1	Pebble Beach	West side of Pebble Beach Drive/Marhoffer Creek to 6 th Street	public road, public parking, recreational trail, private residential development, public access improvements, beach and tidepool activities, slope protection, safety rails and signs	ocean views, off-shore rock views
CSC2	Howe Drive/ Beachfront Park	South Side of Howe Dr/ B St to Play St	public road, public parking, recreational trail, picnicking, beach access, beach and harbor activities, slope protection, safety rails and signs	Harbor activities views, Redwood Parks views, Battery Point Lighthouse, B St Pier, breakwater views
CSC3	Anchor Way	South side of Anchor Way/ Hwy 101 to Whaler Rock	public road, public parking, recreation trail, beach access, dredge spoils disposal, beach activities, breakwater protection, boat launching, visitor facilities, harbor activities	ocean views, Redwood Park views, visitor facilities/beach views, breakwater views
COASTAL HISTORIC SCENIC RESOURCES				
CH1	Battery Point Lighthouse	South end of A Street	public parking, public access, visitor facilities, lighthouse activities, museum, residence	ocean views, off-shore rock views, harbor activities view, B St. Pier, breakwater views
Source: City of City Crescent Planning Department; Del Norte County Local Coastal Plan, 1986.				



1.7 CULTURAL RESOURCES

The Crescent City area contains rich cultural resources that include archeological and historical sites. Some of these archeological and historical resources have been identified and are available for study and enjoyment by area residents and visitors. Given the heritage of the area, however, it is possible that many sites and resources remain undiscovered.

PALEONTOLOGICAL RESOURCES

Paleontological resources are typically described as forms from the past, especially prehistoric life forms commonly referred to as plant and animal fossils that are preserved in geologic formations. Fossil-bearing geologic formations often include sedimentary deposits such as sandstones and shales. The coastal plain marine terrace typical of the geology underlying the Crescent City area would be one of the most likely areas in Del Norte County to contain these resources. No significant paleontological resources have been identified in previous planning and resource analysis studies. The most significant paleontological resources in the area are located near Point St. George, just north of Crescent City on the coast.

ETHNOGRAPHY

The earliest known inhabitants of Del Norte County were the Tolowa and the Yurok. Tolowa territory covers the northern part of the county and Yurok, the southern part. Because the precise geographic boundaries that these groups occupied is not known, both groups are discussed in this section. Both groups were focused on marine resources, however the Yurok also settled inland along the Klamath River. The Tolowa and the Yurok have much in common, but the foci of their cultural contacts are different. The Tolowa had stronger contacts with, and similarities to, the aboriginal groups of the Pacific Northwest Coast while the Yurok were more strongly connected to groups in California.

Tolowa

The Tolowa are Athapaskan speakers but their dialect is more closely related to the Tutuni of the Oregon coast than to other California Athapaskan speakers. Ethnographically, the Tolowa occupied roughly 640 sq mi and were primarily dependent on coastal and riverine resources. They utilized the area from the mouth of the Winchuck River in southern Oregon to the mouth of Wilson Creek, roughly 17 miles south of Crescent City (Gould 1978). Although they occupied and utilized inland areas, these inland boundary areas are less clearly marked.

The village was the primary social unit and each village claimed a tract of shore area. At the time of first European contact in 1828, there were eight permanent Tolowa villages close to the coast, seven with populations of around 300 (Gould 1978). Estimates of Tolowa population before European contact range from 500 to 2,500. According to a 1910 census, they numbered only 120 (Kroeber 1925). In 1856, three years after the Federal government established the reservation system, there were 316 Tolowa remaining in Del Norte County, mostly at the Smith River Rancheria (Fredrickson 1977).

Within the village were houses made of redwood planks and subterranean sweathouses. Men and boys past puberty lived in the sweathouses and conducted activities, such as woodworking and stone knapping, in



designated areas. Women and children lived in family houses. The dead were buried in a cemetery away from the village.

Formal social stratification was lacking and there were no formal chiefs or councils (Gould 1978). Headmen in each village gained their positions through their wealth, which was based on the possession and display of prestige goods (e.g., obsidian blades, red woodpecker scalps, and/or dentalium shell beads). Prestige goods were not usually used to purchase food or everyday necessities.

The Tolowa had a seasonal subsistence pattern, utilizing resources in four geographic zones (Gould 1978). Coastal areas, the site of permanent villages, offered maritime resources including sea mammals. Redwood forests, immediately inland, provided solitary game and wood for houses and canoes. The oak and Douglas-fir region, farther inland, provided a supply of acorns. The riverine habitat of the Smith River and its tributaries provided many resources including salmon, eels, water fowl, and tule reeds. Families would leave permanent villages to catch salmon and collect acorns in areas that they “owned.” These fishing areas and acorn groves could be up to 15 miles inland. The permanent coastal villages were not abandoned during these periods; baskets of acorns and dried fish were carried back to the village for storage and later processing. Like many California people, the Tolowa were entirely dependent on hunting and gathering wild foods, but there is some indication that tobacco may have been cultivated.

Although the Tolowa are not a Federally recognized tribe, they are among the residents of the Smith River Rancheria, located near the mouth of the Smith River. The Rancheria covers roughly 160 acres and is home to members of a number of northern California and southern Oregon Native American groups (Eargle 1986). The Smith River Rancheria has representatives in local government to voice the interests and concerns of the Tolowa population in Del Norte County and is currently in the process of drafting a master plan to help manage the cultural resources on its land (Steinruck pers comm.).

Yurok

The Yurok are an Algonquian-speaking group that occupied the southern reaches of Del Norte County. They occupied and exploited the coast of California roughly between Crescent City and Trinidad, and the lower 36 miles of the Klamath River (Waterman 1993). The way of life of the Yurok was similar to that of the Tolowa. There were contacts and intermarriage between the two groups (Pilling 1978). Culturally, however, ties of the Yurok ran south and east, up the Klamath River (Fredrickson 1977, Kroeber 1925).

Population estimates of the early 1850s vary between 1,000 and 2,500 individuals (Kroeber 1925, Pilling 1978). Beyond the records of the early 1850s, there is little reliable population information for the Yurok. The first contact with Europeans was probably with the Spanish from trading ships in 1775. The first direct and documented interaction was with fur traders from the Hudson Bay Company in 1827 (Pilling 1978).

The subsistence pattern of the Yurok was similar to that of the Tolowa. They occupied permanent riverine or coastal villages and ventured inland for acorns and game. They fished very little in the ocean, catching only surf fish. Large canoes enabled them to exploit sea mammal rookeries located offshore. While whales were not hunted, beached whales were considered “gifts of the sea” and utilized whenever they were available (Waterman 1993). In addition, shellfish and seaweed were important resources. Inland “properties,” such as fishing spots and hunting or snaring spots, were private property, while acorn-gathering places were owned by villages or houses (Waterman 1993). Coastal properties, including stretches of beach, outlying rocks, and



sea stacks, were also “corporately” owned (Waterman 1993). Although there is no evidence of the Yurok being agriculturalists, there is evidence that they planted and cultivated tobacco (Kroeber 1925).

The primary unit of Yurok society was the village, which was similar in organization to the Tolowa society (Pilling 1978). Villages owned property communally and occasionally acted as a unit in wars or feuds. Yurok villages were grouped into village clusters, which allegedly followed lines of descent. A group of village clusters formed a district, which was important in ceremonial life and in the mediation of disputes. The Yurok had a complex system of compensation for injuries, deaths, and other transgressions including laws regarding crimes against the common good (Pilling 1978).

The Yurok had a more strongly stratified society than did the Tolowa in that there were aristocrats and commoners. Although wealth bred power, that power was limited. A wealthy man may have been able to dominate a small village, but there is no indication that he could have controlled a village cluster or even a large village (Pilling 1978). Slavery was present, but not very common. Only the very wealthy owned slaves, and they only rarely owned more than a few at a time (Pilling 1978).

Intensive non-native settlement associated with the gold rush and the founding of Crescent City in the 1850s led to a dramatic reduction in the numbers of the native population. Introduced diseases and, to a lesser extent, pseudomilitary attacks by non-natives on Native Americans lead to a significant decline in Yurok populations. Reduced in number, they were pushed off their land and relocated to rancherias or reservations.

As of 1993, 2,904 members of the Yurok tribe lived on the Rancheria Prime Service Area (Yurok Tribal Council 1993). The projected tribal member population for 1996 was 3,449 to 3,927. The Rancheria covers 56,585 acres at the mouth of the Klamath River.

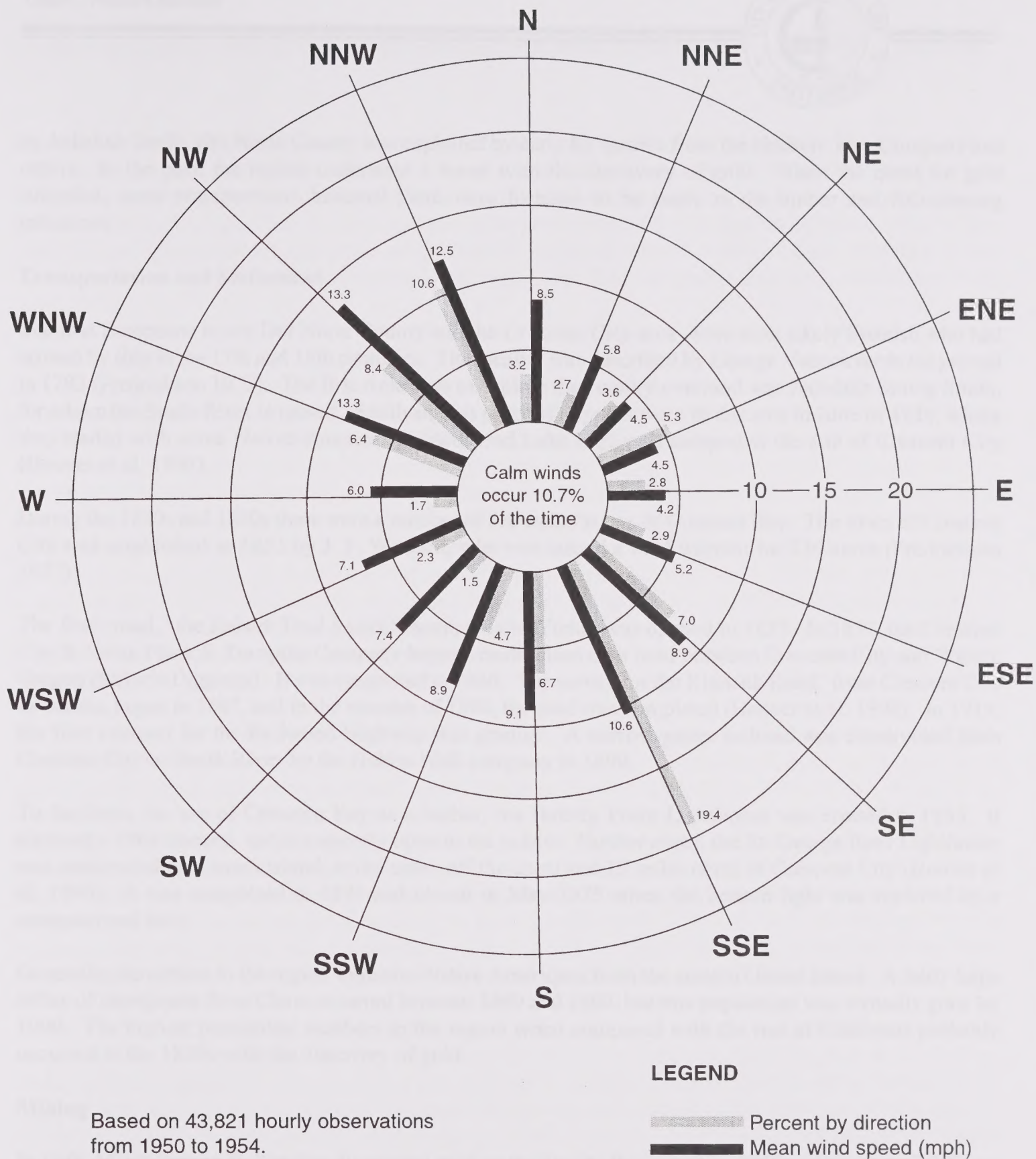
The Yurok tribe has their own constitution (1993) and members are active in local government, as well as in the tribal government.

They are involved in local business, including forestry and independent commercial fisheries, traditional arts and crafts manufacturing, construction and related services, computers and related products, trucking and other transportation services, film and entertainment, and recreation- and tourism-related businesses. Additionally, there are tribal-owned businesses, including forestry and timber sales, fisheries, Salmon Festival, the Energy Trust Fund, and several casinos.

Today, some members of the Yurok tribe live on the Resighini Rancheria in Del Norte County. Located on the south shore of the mouth of the Klamath River, this rancheria was established in 1938 and covers 228 acres (Eargle 1986). The Yurok tribe at the Resighini Rancheria has a master plan and is active in the management of cultural resources on its land and in countywide cultural resource issues (Murguia pers comm.).

HISTORIC CONTEXT

Crescent City is one of the most populated areas of Del Norte County. Known today for its recreational fishing and hunting areas, Del Norte County occupies the northwestern corner of California. Because of its rugged terrain and sparse population, it is one of the least known areas in the state. Traversed in the 1820s



Source: California Air Resources Board 1984.

Figure 1-5
Wind Rose Depicting Average Wind Speed and
Directional Frequency at Crescent City



by Jedediah Smith, Del Norte County was exploited by early fur traders from the Hudson Bay Company and others. In the past, the region underwent a boom with the discovery of gold. When the quest for gold subsided, some entrepreneurs believed there were fortunes to be made in the timber and fish-canning industries.

Transportation and Settlement

The first Europeans to see Del Norte County and the Crescent City area were most likely Spanish who had arrived by ship in the 17th and 18th centuries. The locality was described by George Vancouver in his journal in 1792 (Fredrickson 1977). The first American to explore the country overland was Jedediah Strong Smith, for whom the Smith River is named. Smith and his party of trappers were in the area in June of 1828, where they traded with some Native Americans, discovered Lake Earl, and camped at the site of Crescent City (Hoover et al. 1990).

During the 1840s and 1850s there were a number of sea explorations of Crescent Bay. The town of Crescent City was established in 1853 by J. F. Wendell, who was issued a land warrant for 230 acres (Fredrickson 1977).

The first "road," the Kelsey Trail from Crescent City to Yreka, was opened in 1855. In 1857, the Crescent City & Yreka Plank & Turnpike Company began construction on a road between Crescent City and Waldo, Oregon (Sailor's Diggings). It was completed in 1860. The survey for the Klamath Road, from Crescent City to Eureka, began in 1887, and in the summer of 1894, the road was completed (Hoover et al. 1990). In 1919, the first contract for the Redwood Highway was granted. A narrow-gauge railroad was constructed from Crescent City to Smith River by the Hobbs-Wall company in 1890.

To facilitate the use of Crescent Bay as a harbor, the Battery Point Lighthouse was erected in 1856. It survived a 1964 tsunami and is currently open to the public. Farther north, the St. George Reef Lighthouse was constructed on a small island, seven miles off the coast and 13 miles north of Crescent City (Hoover et al. 1990). It was completed in 1891 and closed in May 1975 when the beacon light was replaced by a computerized buoy.

Generally, the settlers in the region were non-Native Americans from the eastern United States. A fairly large influx of immigrants from China occurred between 1860 and 1880, but this population was virtually gone by 1900. The highest population numbers in the region when compared with the rest of California probably occurred in the 1850s with the discovery of gold.

Mining

In 1848, Major Pierson B. Reading discovered gold on the Trinity River, and by 1850 northwestern California was teeming with miners.

The town of Crescent City was laid out in early 1853 and became a bustling shipping and trade center, catering to and supplying the miners (Smith 1989). Gold discoveries in the immediate vicinity of Crescent City and on the south fork of the Smith River fueled the boom (Hoover et al. 1990). During this period, residents and miners began requesting more transportation routes (Hoover et al. 1990). However, within a few



years, a decline in the production of local mines and the opening of more promising gold fields elsewhere, drew all but a handful of miners from the area (Smith 1989). By the late 1850s the boom was over.

The mining industry in the region was small compared with that of other California regions. There were limited amounts of gold and other materials to be extracted. Other materials that were mined included iron, cobalt, platinum, chromite, copper, quicksilver, and pyrite (Fredrickson 1977).

Military Activity

There was some military activity in the Crescent City region of Del Norte County. Camp Lincoln was established in September of 1862 at Elk Valley near Crescent City, to keep the peace between Native Americans and miners. The fort was abandoned in May 1870 (McBeth 1950).

The abandonment of this and other forts in the area did not mean the end of hostilities. There was considerable trouble and argument over land on the Klamath Indian Reservation. In 1862, many Klamath Indians moved to the Smith River Reservation and by the mid-1870s, the miners and settlers began to feel that the reservation must have been abandoned as a governmental activity. In 1874, a government declaration made it official and settlement by non-natives began. However, an expedition in 1877 noted that Native Americans were beginning to drift back into the area and hostilities seemed likely, so non-natives were instructed to leave. The settlers protested, and in May of 1894, the reservation was opened to non-native settlers (McBeth 1950).

Timber

Another industry important in the region was the timber industry. According to Fredrickson (1977), the area experienced a boom in settlement in the 1850s as a result of lumbering activity. However, it seems more likely that the timber industry followed the miners to supply lumber for mining and housing purposes, as happened in other areas of California. Although many of the sawmills were located along the Klamath and Smith Rivers, lumber played a major part of the activities in Crescent City as lumber was shipped to Crescent City for reshipment to San Francisco. Because of the region's access problems, the timber business was not particularly profitable. Rugged terrain and the lack of a good harbor made getting the timber to market difficult.

Fishing and Canning

A number of commercial fishing and canning efforts took place in the region. Commercial fishers caught salmon, albacore, shrimp, crab, halibut, cod, and tuna in the coastal waters and rivers of Del Norte County (Fredrickson 1977).

Salmon, sometimes referred to as "river silver," were caught around Point St. George as early as 1877 (Burdick 1993; McBeth 1950). Because of the small size of the Smith River, the salmon run quickly declined and commercial fishing ceased to be profitable (Burdick 1993). By the 1920s, few fished either the Smith or the Klamath Rivers for profit, and by 1925 the commercial fishing industry was also discontinued on the Klamath River.



Recreation and Tourism

Today, one of the biggest industries in the region is tourism. Numerous historic landmarks relating to early settlement in the Crescent City area are open to the public. Additionally, the rugged beauty of the nearby Six Rivers and Siskiyou National Forests is an attraction for hikers and campers. Other proximate natural wonders include Redwood National Park, Jedediah Smith Redwood State Park, and Del Norte Coast Redwood State Park.

SENSITIVITY

There are several areas in the region that have a significant concentration of prehistoric and/or historic archaeological sites. Predictably, these areas are mostly along rivers and on the coast. Topographic maps annotated with cultural resources information at the Information Center at California State University (CSU), Sonoma, show areas of particularly dense occupation, both historic or prehistoric.

Prehistoric Sites

The Tolowa and the Yurok exploited marine and riverine resources, thus most prehistoric sites lie along rivers or on the coast. Large prehistoric village sites are located outside the Crescent City area at the mouth of both the Smith and the Klamath Rivers, and there are Tolowa sites on Lake Earl. Inland sites are usually not continuous habitation sites; they are sites associated with hunting, gathering, or trading trips.

The Big Flat area on the south fork of the Smith River was used by the Tolowa and their trading partners as a meeting ground. Although there appear to be no permanent Tolowa villages, there are temporary habitation sites that may be the camp sites of Tolowa and visiting traders.

Historic Sites

Historic sites are also located along rivers and on the coast in the region. Remnants of World War II include a Japanese shipwreck off Crescent City.

The Yontocket Historic District, north of the Crescent City area, is listed on the National Register of Historic Places (NRHP). The district includes the Yontocket village site and associated historic cemetery; areas to the south of the village that are important for shaman activities, a group of pools south of the site, and Troolet, a major occupation site at the north edge of the district (National Register of Historic Places nomination form 1970). Although Yontocket is the sacred center, it is unclear whether Troolet is a "suburb" of Yontocket, or if Troolet is the secular area. The district covers roughly 1,000 acres. It is eligible under "criterion C" because it is a unique example of a Yurok village with both prehistoric and historic components, and under "criterion D" because it is a deep deposit with the potential to yield a large amount of data on environmental and cultural aspects of the prehistoric and historic habitation. Additionally, this was the site of the Burnt Ranch Massacre, which took place in 1853. The Tolowa inhabitants were overtaken and killed by Euro-Americans who were moving into the area to establish Crescent City and work the mines on the Smith River.

Built in 1856, the Battery Point Lighthouse is a historical landmark that is located on a small island about 200 yards off the coastline of the harbor area, accessible only at low tide (Del Norte County General Plan 1976).



Lit only two years after Crescent City was incorporated, the lighthouse is one of the oldest inhabited lighthouses in California. The lighthouse is now a museum run by the Del Norte County Historical Society and is home to historical society curators who maintain the building for visitors (Del Norte County Lighthouses 1998). The inside of the Lighthouse contains authentic artifacts from signaling vessels through the last hundred years (Del Norte County General Plan 1976).

The Point St. George Archaeological District is another significant historical area listed on the National Register (Del Norte County General Plan 1976). This area is located northwest of the incorporated Crescent City area along the coast near the County airport. The St. George Reef Lighthouse also stands several miles offshore of Point St. George as the tallest lighthouse ever constructed (Del Norte County Lighthouses 1998). At 140-feet tall, this lighthouse was finished in 1882 after nine years of construction following the sinking of *Brother Jonathan*, a side-wheel paddle ship. This accident was labeled as California's worst maritime disaster (Del Norte County Lighthouses 1998).

1.8 AIR QUALITY

This chapter describes Crescent City's regional climate, Federal and State ambient air quality standards, existing air quality conditions in Crescent City, and air quality management in the North Coast Unified Air Quality Management District (NCUAQMD).

TOPOGRAPHY, CLIMATE, AND ATMOSPHERIC CONDITIONS

Crescent City is located in Del Norte County, which is the northernmost county on the California Coast. Crescent City is located in an area of fairly level terrain along the coastal plain. However, much of the rest of the county is comprised of mountainous areas.

The climate within Crescent City is typical of the coastal areas found throughout the county. The coastal areas experience cool summers with frequent fog and mild winters with a lot of rain. The ocean is the primary weather factor within the City and moderates temperatures in coastal areas.

Predominant winds in the city exhibit seasonal patterns. During the summer, frequently strong north to northwesterly winds are common. In winter, storms from the south Pacific result in an increase of southerly winds. Offshore and onshore wind flows are common along the coast and within the City. Onshore flows frequently bring cool temperatures, while offshore flows often push marine air away from the coast and result in warm temperatures. The average annual wind speed is about eight miles per hour. Figure 1-5 shows a wind rose depicting annual average wind speed and directional frequency at Crescent City.

Temperature inversions are a common occurrence in the area. Temperature inversions occur when warm air overlies cooler air. This results in stable atmospheric conditions with little vertical mixing. There are two types of temperature inversions that are common in the North Coast region: the radiation inversion and the subsidence inversion. Coastal regions, inclusive of Crescent City, are sometimes affected by what are known as modified subsidence inversions.

A radiation inversion is caused by cooling of the air layer near the surface of the ground and may extend upward several hundred feet. This inversion type is found throughout the year during the night and early



morning hours, although it is most prominent from late fall to early spring. Heat from the sun warms the lower layers and as the air rises vertical mixing resumes. During the winter months the radiation inversion may persist throughout the morning hours and at times may persist for several days. This type of inversion is more of a problem in the inland valleys, although it also occurs in the coastal areas.

A subsidence inversion is caused by downward moving air aloft. This is common in the area of high pressure along and off the coast. As the air moves downward it becomes warmer than the air immediately below. This limits vertical mixing of the air. This type of inversion can frequently affect large areas and is common during the summer months. The modified subsidence inversion is the normal subsidence inversion intensified by cooling of the lower layers from the cool ocean water found off the coast. Thus, not only are the upper layers warmed, but the lower layers are cooled, giving a very strong, shallow inversion. This type of inversion is present mainly from late spring through early fall and generally affects only the coastal areas of Del Norte County, inclusive of Crescent City.

AIR POLLUTANTS AND AMBIENT AIR QUALITY STANDARDS

Both the State of California and the Federal government have established ambient air quality standards for several different pollutants. For some pollutants, separate standards have been set for different periods. Most standards have been set to protect public health. For other pollutants, standards have been based on other values such as protection of crops, protection of materials, or avoidance of nuisance conditions. The pollutants of greatest concern in Del Norte County and Crescent City are carbon monoxide (CO), ozone, and inhalable particulate matter (PM₁₀). Table 1-5 shows the State and Federal standards for a variety of pollutants.

Carbon Monoxide

State and Federal Carbon Monoxide (CO) standards have been set for both one-hour and eight-hour averaging times. The State one-hour standard is 20 parts per million (ppm) by volume, and the Federal one-hour standard is 35 ppm. Both state and Federal standards are nine ppm for the eight-hour averaging period. CO is a public health concern because it binds strongly to hemoglobin, the oxygen-carrying protein in blood, and thus reduces the blood's capacity for carrying oxygen to the heart, brain, and other parts of the body. At high concentrations, CO can cause heart difficulties in people with chronic diseases, can impair mental abilities, and can even cause death.

Motor vehicles are the predominant source of CO emissions in most areas. High CO levels develop primarily during winter when periods of light winds combine with the formation of ground-level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures. Woodstoves, which are used more in the winter, can also emit large amounts of CO.

Ozone

Ozone is not emitted directly into the air, but is formed by a photochemical reaction in the atmosphere. Ozone precursors, which include reactive organic gases (ROG) and oxides of nitrogen (NO_x), react in the atmosphere in the presence of sunlight to form ozone. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is primarily a summer air pollution problem. Ozone is a



respiratory irritant and an oxidant that increases susceptibility to respiratory infections and can cause substantial damage to vegetation and other materials.

State and Federal standards for ozone have been set for a one-hour averaging time. The State one-hour ozone standard is 0.09 ppm, not to be exceeded. The Federal one-hour ozone standard is 0.12 ppm, not to be exceeded more than three times in any three-year period.

Suspended Particulate Matter Smaller than 10 Microns in Diameter

Suspended particulate matter (airborne dust) consists of particles small enough to remain suspended in the air for long periods. Fine particulate matter (PM₁₀) includes particulates of ten microns or less in diameter—those which are small enough to be inhaled, pass through the respiratory system, and lodge in the lungs, with resultant health effects.

PM₁₀ is comprised of dust, sand, salt spray, metallic and mineral particles, pollen, smoke, mist, and acid fumes, in various combinations. Also of importance are sulfate (SO₄) and nitrates (NO₃) which are secondary particles formed as precipitates from photochemical reactions of gaseous sulfur dioxide (SO₂) and oxides of nitrogen (NO_x) in the atmosphere. The actual composition of PM₁₀ varies greatly with time and location, depending on the sources of the material and meteorological conditions.

In the coastal areas, sea salts make up the largest share of PM₁₀ (approximately 35 percent), with automobiles and woodstoves (22 and 30 percent, respectively) being other large contributors. Industrial sources, road dust, and open burning do not seem to contribute to any large degree to PM₁₀ along the coast. Inland, woodstoves, open burning, road dust, and auto emissions are major contributors to PM₁₀. Woodstoves account for between 30 and 60 percent of inland PM₁₀ emissions, depending on differences in conditions, seasons, and reporting methods. Woodstove emissions contribute more to PM₁₀ during winter months in both inland and coastal areas.

Automobile-related sources of PM₁₀ include tailpipe emissions, secondary reactions in the atmosphere from other combustion gases, tire wear, brake wear, and entrainment of road dust.

Acute and chronic health effects associated with high PM₁₀ levels include the aggravation of chronic respiratory diseases, heart and lung disease, and coughing, bronchitis, and respiratory illnesses in children. Recent mortality studies have shown a statistically significant direct association between mortality and daily concentrations of particulate matter in the air (Schenker 1993). Non-health-related effects include reduced visibility and soiling of buildings.

Because health effects associated with suspended particulates relate primarily to PM₁₀—rather than particulates larger than 10 microns in diameter—Federal and state air quality standards for particulate matter apply only to PM₁₀. The State PM₁₀ standards are 50 micrograms per cubic meter as a 24-hour average and 30 micrograms per cubic meter as an annual geometric mean. The Federal PM₁₀ standards are 150 micrograms per cubic meter as a 24-hour average and 50 micrograms per cubic meter as an annual arithmetic mean. The discrepancy between the State and Federal standards reflects different perspectives concerning

TABLE 1-5
AMBIENT AIR QUALITY STANDARDS
California and United States

Pollutant	Symbol	Average Time	Standard, as parts per million		Standard, as micrograms per cubic meter		Violation Criteria	
			California	National	California	National	California	National
Ozone	O ₃	1 hour	0.09	0.12	180	235	If exceeded	If exceeded on more than 3 days in 3 years
Carbon monoxide	CO	8 hours	9.0	9	10,000	10,000	If exceeded	If exceeded on more than 1 day per year
		1 hour	20	35	23,000	40,000	If exceeded	If exceeded on more than 1 day per year
		(Lake Tahoe only) 8 hours	6	N/A	7,000	N/A	If exceeded	N/A
Nitrogen dioxide	NO ₂	Annual average 1 hour	N/A	0.053	N/A	100	N/A	If exceeded
			0.25	N/A	470	N/A	If exceeded	N/A
Sulfur dioxide	SO ₂	Annual average 24 hours	N/A	0.03	N/A	80	N/A	If exceeded
		1 hour	0.04	0.14	105	365	If exceeded	If exceeded on more than 1 day per year
			0.25	N/A	655	N/A	N/A	N/A
		1 hour	0.25	N/A	655	N/A	N/A	N/A
Hydrogen sulfide	H ₂ S	1 hour	0.03	N/A	42	N/A	If equaled or exceeded	N/A
Vinyl chloride	C ₂ H ₃ Cl	24 hours	0.010	N/A	26	N/A	If equaled or exceeded	N/A
Inhalable particulate matter	PM10	Annual geometric mean	N/A	N/A	30	N/A	If exceeded	N/A
		Annual arithmetic mean	N/A	N/A	N/A	50	N/A	If exceeded
		24 hours	N/A	N/A	50	150	N/A	If exceeded on more than 1 day per year
Sulfate particles	SO ₄	24 hours	N/A	N/A	25	N/A	If equaled or exceeded	N/A
Lead particles	Pb	Calendar quarter	N/A	N/A	N/A	1.5	N/A	If exceeded no more than 1 day per year
		30 days	N/A	N/A	1.5	N/A	If equaled or exceeded	N/A

Notes: All standards are based on measurements at 25°C and 1 atmosphere pressure.
National standards shown are the primary (health effects) standards.
N/A = not applicable.

Source: California Air Resources Board, 1997; U.S. Environmental Protection Agency, 1997.



the health risks associated with PM₁₀. The Federal standard is based on reversible effects in healthy people, while the state standard is based on irreversible effects (e.g., increased mortality rates in sensitive populations such as the elderly or chronically ill).

To comply with or “attain” the State PM₁₀ standard, a locality must generally be able to demonstrate that it has achieved the standard for three consecutive years, as verified by sampling data.

EXISTING AIR QUALITY CONDITIONS

Air quality on the North Coast, unlike in many areas of California, has not deteriorated over the last three decades; in fact, the quality of air on the North Coast has actually shown improvement in most areas. Because air pollution and emissions are not limited to geographic boundaries, this air quality discussion is presented for the region.

Emission Sources

According to the California Air Resources Board (1995a) and the North Coast Unified Air Quality Management District (1995), air pollutants in Del Norte County result from several sources. The main sources of the pollutants described above are as follows:

- CO: Burning and residential fuel combustion.
- ROG: Burning and vehicle exhaust.
- NO_x: Ship and boat exhaust, truck exhaust, and industrial equipment exhaust.
- PM₁₀: Airborne sea salts, woodstoves, and automobile exhaust, with minor contributions from industrial sources, road dust, and open burning.

Carbon Monoxide

There were no carbon monoxide monitoring stations located in the Crescent City region or anywhere in Del Norte County during the summary period.

Ozone

Ozone monitoring data for 1991–1995 from stations in Del Norte County are summarized in Table 1-6. Although these stations are not in Crescent City, these are the nearest monitoring stations for ozone that exist and likely represent similar levels that occur in the City. Data from 1995 are the most recent data available. Long-term pollutant monitoring is typically halted or never begun in areas where pollutant concentrations are well below the standards. The monitoring data shows no exceedances of the State and Federal one-hour ozone standards during the period.

Particulate Matter₁₀

Particulate Matter₁₀ monitoring data for the period from 1995–1996 is summarized in Table 1-7. The PM₁₀ monitoring station was located in Crescent City. The data shows that there were no exceedances of the State or Federal standards at Crescent City during 1995 and 1996.

**TABLE 1-6**

**SUMMARY OF OZONE MONITORING DATA
Del Norte County
1991 to 1995**

Station Location	Yearly Monitoring Data				
	1991	1992	1993	1994	1995
Gasquet - Airport					
1st High (ppm)	0.06	0.07	0.06	0.06	0.06
2nd High (ppm)	0.06	0.06	0.06	0.06	0.05
Days above standard (a)	0	0	0	0	0
Redwood National Park - Requa					
1st High (ppm)	ND	ND	0.05	0.05	0.05
2nd High (ppm)	ND	ND	0.05	0.05	0.05
Days above standard*	ND	ND	0	0	0

ND = no data available.

* Days above standard = days with one-hour concentration above State one-hour standard of 0.09 ppm.

Source: California Air Resources Board 1997.

TABLE 1-7

**SUMMARY OF PM10 MONITORING DATA
Crescent City
1995 and 1996**

Station Location	Yearly Monitoring Data	
	1995	1996
Crescent City		
Highest 24-hour concentration (ug/m3)	41	41.7
Geometric mean (ug/m3)	17.5	15.9
Arithmetic mean (ug/m3)	20.4	17.8
Percentage of days above standard*	0%	0%

ND = no data available.

* Percentage of days above standard = days above State 24-hour standard of 50 ug/m3 divided by number of days sampled.

Sources: California Air Resources Board 1997; North Coast Unified Air Quality Management District 1997.



REGULATORY SETTING

Air Quality Management

Responsibility for air quality management is shared among local, State, and Federal levels of government. Air quality management planning programs were initially developed in response to requirements established by the Federal Clean Air Act (FCAA), which was signed into law in 1970, and substantially amended in 1977 and again in 1990. The enactment of the California Clean Air Act of 1988 (CCAA) produced additional changes in the structure and administration of air quality management programs in California.

Air Quality Management at the State Level

The CCAA substantially added to the authority and responsibilities of the State's air pollution control districts, which had been established to administer the FCAA. The CCAA established an air quality management process that generally parallels the Federal process. The CCAA, however, focuses on attainment of the state ambient air quality standards that, for certain pollutants and averaging periods, are more stringent than the comparable Federal standards.

The CCAA requires that air districts prepare air quality attainment plans if air within the district violates state air quality standards for CO, sulfur dioxide (SO₂), NO_x, or ozone. No locally-prepared attainment plans are required for areas that violate the state PM₁₀ standards. The CCAA requires that the state air quality standards be met as expeditiously as practicable, but it does not set precise attainment deadlines. Instead, the act established increasingly stringent requirements for areas that will require more time to achieve the standards. The least stringent requirements were set for areas that were expected to achieve air quality standards by the end of 1994. The most stringent requirements were set for areas that were projected not to achieve the standards until after 1997.

Air Quality Management in Del Norte County

The North Coast Unified Air Quality Management District (NCUAQMD) is responsible for monitoring compliance with the requirements of the FCAA and CCAA in the North Coast Air Basin, which includes Humboldt, Trinity, and Del Norte Counties. The attainment of the state PM₁₀ standard is based on an area not exceeding the 24-hour concentration of 50 micrograms per cubic meter or the annual geometric mean of 30 micrograms per cubic meter. As indicated above, Del Norte County is currently (April 1997) designated as nonattainment for the state PM₁₀ standard.

Prompted by the nonattainment status of the three counties within its jurisdiction, the NCUAQMD adopted the *Particulate Matter (PM₁₀) Attainment Plan* in May 1995 (North Coast Unified Air Quality Management District 1995). The *Attainment Plan* presents information about the nature and causes of exceedances of the PM₁₀ standards and identifies cost-effective control measures that can be implemented to bring PM₁₀ levels within the California Ambient Air Quality Standards for PM₁₀. The *Attainment Plan* identifies several transportation control measures, land use measures, and open burning and woodstove measures that could reduce PM₁₀ concentrations in the county.



The Federal Clean Air Amendments of 1977 established a program to prevent the significant deterioration (PSD) of air quality in areas where the air is relatively clean. The areas of the country covered by the PSD program provisions are divided into three classes. Different degrees of air quality degradation are deemed acceptable in each of the three classes. Class I areas have exceptionally good air quality, whereas Class II and III areas have relatively lower air quality. Congress designated several areas of the United States as Class I areas where relatively pristine air quality is to be preserved. One of those areas, Redwoods National Park, is located in Del Norte County; the boundaries of Redwood National Park have been mapped as part of the County's General Plan Land Use Diagram. Another Class I area, the Marble Mountain Wilderness, is located due east of Del Norte County in Siskiyou County. Consequently, large new sources of air pollution in Del Norte County and major modifications to existing sources must be evaluated by the NCUAQMD for their potential impacts on these Class I areas.



1.9 FINDINGS

WATER RESOURCES

- Very few surface water resources exist in the Crescent City area.
- Crescent City municipal water use is dependent upon groundwater resources.
- Current groundwater uses appear to be supported by the existing groundwater resources in the area.
- There are local areas where groundwater quality may limit development uses.

SOIL RESOURCES

- Soils in the coastal plain have moderate to severe limitations that can limit septic system use and/or development density or intensity.
- Soils in the coastal plain have low expansive clay contents and are not subject to shrink-swell properties.

VEGETATION RESOURCES

- The incorporated area of Crescent City contains little native vegetation resources.
- A majority of the vegetation resources in the Crescent City area are comprised of coastal dune habitat and grasslands.
- Coastal dune communities are considered important native communities because of their limited extent relative to historic distributions.
- The county supports 115 special status plant species and 57 special-status animal species, some of which may be in the Crescent City area.

RECREATION RESOURCES

- In addition to the various City facilities (e.g., the public pool, Peterson Park), County facilities, as well as State and Federal lands provide recreational resources for the City.
- The private sector provides a significant component of recreation facilities and visitor-serving uses in the county.



CULTURAL RESOURCES

- The Tolowa and Yurok cultural groups were the first known inhabitants in the area.
- Little archeological research has been done within the Crescent City area. Undiscovered archeological resources may be important in reconstructing California's prehistoric past.
- There are a limited number of historical properties primarily concentrated in Crescent City.

AIR QUALITY

- The main sources of CO in the Crescent City area are burning and residential fuel combustion; the main sources of ROG are burning and vehicle exhaust; the main sources of NOx are ship and boat exhaust, truck exhaust, and industrial equipment exhaust; the main sources of ozone are ROG and NOx reactions in the atmosphere in the presence of ultraviolet lights; and the main sources of PM10 are entrained road dust, burning, construction and demolition, and fuel combustion.
- No exceedances of air quality standards for any pollutants occur in the Crescent City area.
- Although no monitoring stations near Crescent City are in exceedance of pollutant standards, the North Coast Air Basin, within which Crescent City is located, is designated as non-attainment for the State PM¹⁰ standards.

1.10 PERSONS CONSULTED

Murguia, Sef, Tribal Planner, Yurok Tribe in Klamath, California

Russell, Jeff, Crescent City/Del Norte County Chamber of Commerce

Steinruck, Sheryl, Tribal Administrator, Smith River Rancheria



1.11 BIBLIOGRAPHY

- Burdick, G. 1993. *California's Smith River Steelhead and Salmon*. Frank Amato. Portland, OR.
- California Air Resources Board. *California surface wind climatology*. Aerometric Data Division. Sacramento, CA. 1984.
- _____. *Emission inventory 1993*. Technical Support Division. Sacramento, CA. 1995a.
- _____. *California air quality data*. Volumes XXIII-1991 to Volume XXVII-1995. Annual Summaries. Sacramento, CA. 1997.
- California Department of Conservation, Division of Mines and Geology. *Planning Scenario in Humboldt and Del Norte Counties, California for a Great Earthquake on the Cascadia Subduction Zone*. Sacramento, CA. 1995.
- _____. Department of Water Resources, Northern District. *Smith River Plain Groundwater Study*. Sacramento, CA. 1987.
- _____. *California Water Plan Update Volume 1*. Bulletin 160-93, Sacramento, CA. 1994.
- Del Norte County. *Del Norte County General Plan*. Crescent City, CA. 1976.
- Eargle, D. H. Jr. *The Earth Is Our Mother: a Guide to the Indians of California, Their Locales and Historic Sites*. Trees Company Press. San Francisco, CA. 1986.
- Fredrickson, D. A. *The North Coastal Region*. Pages 471-528 in *California Archaeology*. Michael J. Moratto (ed.). 1984.
- Gould, R. A. *Tolowa*. Pages 128-136 in *Handbook of North American Indians*, Volume 8, California. R.F. Heizer (ed.). Smithsonian Institution. Washington, D.C. 1978.
- Hickman, J. (ed.). *The Jepson Manual: Higher Plants of California*. University of California Press. Berkeley, CA. 1993.
- Holland, R. F. *Preliminary Description of the Terrestrial Natural Communities of California*. State of California, The Resources Agency, Department of Fish and Game. Sacramento, CA. 1986.
- Hoover, M. B., H. E. Rensch, E. G. Rensch, and W. N. Abeloe. *Historic Spots in California*. Revised by D. E. Kyle. Stanford University Press. Stanford, CA. 1990.
- Kroeber, A. L. *Handbook of the Indians of California*. Dover Publications Inc. New York. 1925.
- McBeth, F. T. *Lower Klamath Country*. Anchor Press. Berkeley, CA. 1950.



North Coast Air Quality Management District. *Particulate matter (PM10) attainment plan*. 1995.

_____. Summary of PM10 sampling in Crescent City for 1995 and 1996. 1997.

Pilling, A. R. *Yurok*. Pages 137-154 in *Handbook of North American Indians*, Volume 8, California. R.F. Heizer (ed.). Smithsonian Institution. Washington, D.C. 1978.

Skinner, M. W. and B. M. Pavlik. *California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California*. (Special Publication No. 1.) The California Native Plant Society. Sacramento, CA. 1994.

Smith, E. R. *The History of Del Norte County, California*. Rachel Smith Tomini. Eureka, CA. 1989.

Waterman, T. T. *Yurok Geography*. Trinidad Museum Society. Trinidad, CA. 1993.

_____. Lighthouses of Del Norte County. Available on the Internet @ <http://www.delnorte.org/lighthouse.html>. January 6, 1998.

APPENDIX A

COMMON AND SCIENTIFIC NAMES OF PLANT SPECIES

Beach bur	<i>Ambrosia chamissonis</i>
Beach sagewort	<i>Artemesia pycnocephala</i>
Bigleaf maple	<i>Acer macrophyllum</i>
Blue blossom	<i>Ceanothus thyrsiflorus</i>
Brome	<i>Bromus</i> spp.
Bush chinquapin	<i>Chrysolepis sempervirens</i>
Bush lupine	<i>Lupinus chamissonis</i>
California bay	<i>Umbellularia californica</i>
Cascara buckthorn	<i>Rhamnus purshiana</i>
Ceanothus	<i>Ceanothus</i> spp.
Chamise	<i>Adenostoma fasciculatum</i>
Coastal sand verbena	<i>Abronia latifolia</i>
Coast redwood	<i>Sequoia sempervirens</i>
Coyote brush	<i>Baccharis pilularis</i>
Douglas fir	<i>Pseudotsuga menziesii</i>
European sea rocket	<i>Cakile maritima</i>
Evergreen huckleberry	<i>Vaccinium ovatum</i>
Grand fir	<i>Abies grandis</i>
Greenleaf manzanita	<i>Arctostaphylos patula</i>
Hairgrass	<i>Deschampsia</i> sp.
Huckleberry oak	<i>Quercus vaccinifolia</i>
Leather oak	<i>Quercus durata</i>
Madrone	<i>Arbutus menziesii</i>
Manzanita	<i>Arctostaphylos</i> spp.
Needlegrass	<i>Stipa</i> spp.
Ocean spray	<i>Holodiscus discolor</i>
Pig-a-back plant	<i>Tolmiea menziesii</i>
Port Orford cedar	<i>Chamaecyparis lawsoniana</i>
Red alder	<i>Alnus rubra</i>
Redwood sorrel	<i>Oxalis oregana</i>
Rhododendron	<i>Rhododendron</i> spp.
Sago pondweed	<i>Potamogeton pectinatus</i>
Salal	<i>Gaultheria shallon</i>
Salmonberry	<i>Rubus spectabilis</i>
Scrub oak	<i>Quercus berberidifolia</i>
Sitka spruce	<i>Picea sitchensis</i>
Stink currant	<i>Ribes bracteosum</i>
Tanoak	<i>Lithocarpus densiflorus</i>
Thimbleberry	<i>Rubus parviflorus</i>
Toyon	<i>Heteromeles arbutifolia</i>
Vine maple	<i>Acer circinatum</i>
Western hemlock	<i>Tsuga heterophylla</i>
Wild oat	<i>Avena</i> spp.
Willows	<i>Salix</i> spp.



CHAPTER 2: LAND USE AND POPULATION

CHAPTER 2

LAND USE AND POPULATION

2.1 INTRODUCTION

This chapter is divided into two main sections: land use and population. The land use section, which serves as the principal focus of the General Plan Background Report, discusses the distribution and location of existing land use; summarizes existing general plan and zoning designations; discusses how the Crescent City General Plan relates to other local regional, and State plans; and describes the role of Local Agency Formation Commission (LAFCO). The demographics section describes the population in terms of current conditions, trends, and projections.

2.2 LAND USE

Land use is traditionally the principal focus of the general plan. Due to its high visibility in the general plan, it is the broadest in scope of all the general plan elements.

This chapter provides a context for the General Plan by describing existing land use conditions and local, State, regional, and Federal plans and policies that have a bearing on land use in Crescent City. This chapter describes the existing City of Crescent City General Plan, zoning, and existing land uses. This chapter also summarizes the Del Norte County General Plan, Crescent City/Del Norte County Housing Element, Crescent City Harbor Land Use Plan, the Local Coastal Program as they relate to Crescent City, and describes the role of LAFCO.

REGIONAL SETTING AND CITY LIMITS

Located on the Pacific shoreline of Del Norte County midway between the borders of Oregon and Humboldt County, Crescent City is California's northernmost coastal city. The city is bordered by the ocean, broad beaches, coastal bluffs, the harbor, scattered forests, and rural residences. Crescent City, which is bisected by U.S. Highway 101, is the most urbanized part of the county and is the county's only incorporated city.

As of December 1997, Crescent City encompasses approximately 1.4 square miles of incorporated territory. Figure 2-1 shows Crescent City's city limits. Discontinuous with the City's boundaries is another incorporated exclave of Crescent City: the Pelican Bay State Prison. This 280-acre area is located 10 miles north of Crescent City along Lake Earl Drive. This area was annexed in 1992, two years after its construction.

HISTORIC LAND USE PLANNING IN CRESCENT CITY

Crescent City was founded in 1853 when F.E. Weston set up a small mill to cut wood for the lumber industry. The city incorporated one year later in 1854. The city was laid out in a grid pattern oriented southwest to northeast. In later years as the timber/lumber-based industries grew, the city began to expand northward with a new north to south oriented grid pattern.



1962 General Plan

General planning in Crescent City started in 1962 with the implementation of the General Plan for Crescent City and its surrounding area. This was the City's first effort to develop a coordinated plan for the City's physical development. Although the plan was slated as the official guide for future development, the plan was only advisory.

Covering an area of 17,250 acres defined by the 1962 plan, the greater Crescent City area was bounded by Lake Earl, Jedediah Smith Redwoods State Park, and the Pacific Ocean. The Crescent City Urban Area included five regions: Lake Earl, Elk Valley, Northcrest, Pebble Beach/Downtown, various farms and scattered populations in outlying areas.

The plan summarized and analyzed existing conditions for 1960 and developed future estimates, which covered categories such as developed and vacant/developable land, employment, population, and schools enrollment. The development policy for guiding future growth in the Crescent City urban area was formulated by the Planning Committee of the Chamber of Commerce and the Crescent City Planning Commission. The plan set development policies for the following areas:

- traffic;
- freeways;
- major arteries;
- scenic parkways;
- places of employment;
- residential areas;
- Civic Center;
- central business district and waterfront; and
- recreation.

Major Proposals of the 1962 General Plan

- **Beachfront Recreation and Tourist Center:** The Plan was proposed to increase employment; expand income; capitalize on the Harbor's recreational value; strengthen the Central Business District; and put idle city property to work.
- **Central Business District and Waterfront Plan:** This Plan intended to: minimize automobile traffic and create a pedestrian-friendly environment in the downtown core; create waterfront recreational opportunities close to downtown shopping; attract tourism and protect harbor views through careful urban design; and minimize and concentrate parking facilities away from shopping and other central facilities.

Generalized Land Use

The Plan called for a wide belt of land around the central business district to house various institutions, clubs, churches, lodges, offices, and other non-commercial downtown uses. The Plan intended to concentrate population and service facilities in the downtown and Northcrest area. However, after the 1964 tsunami that

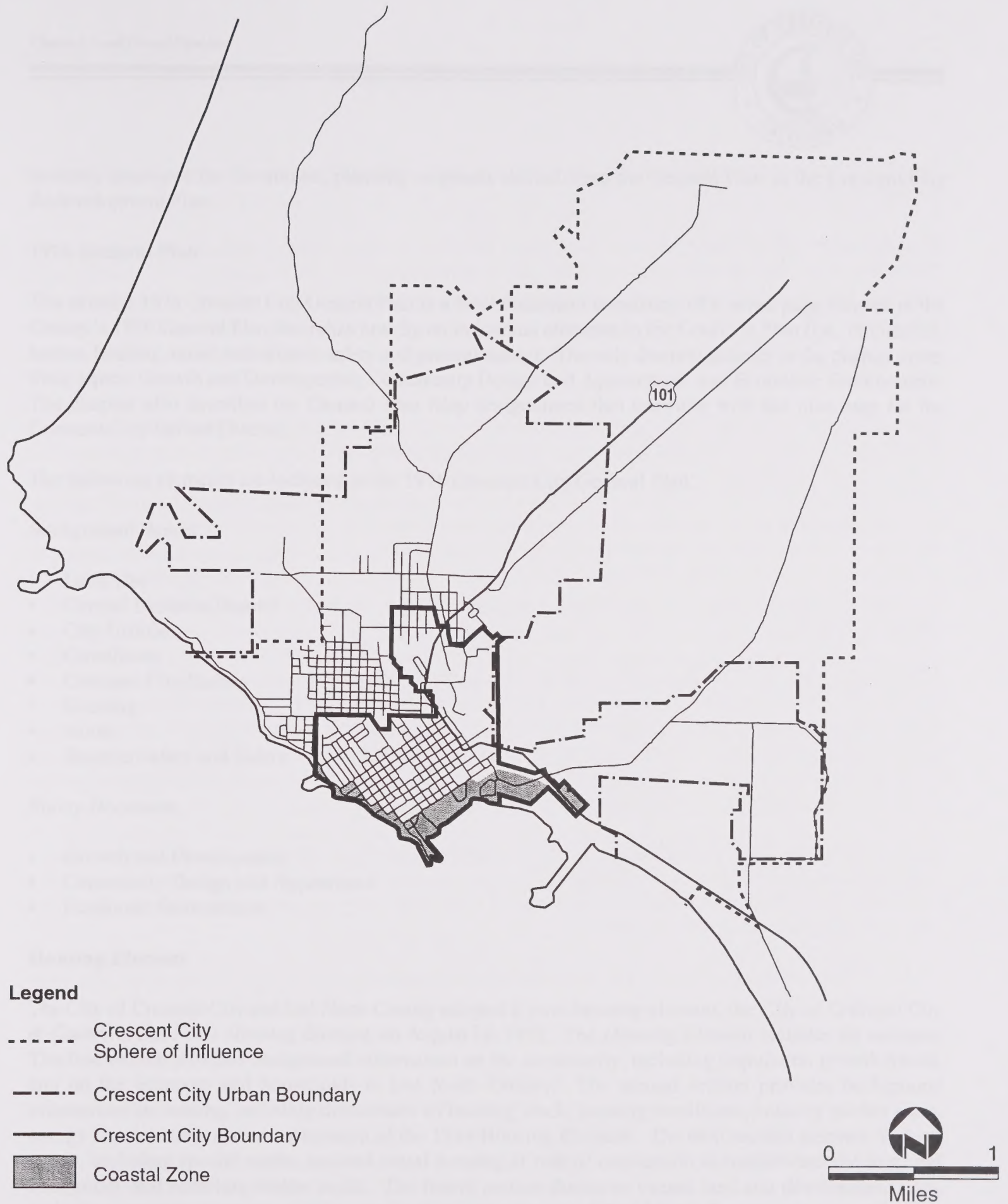


Figure 2-1
Crescent City - City Limits, Urban Boundary,
Coastal Zone Boundary and Sphere of Influence



severely destroyed the downtown, planning emphasis shifted from the General Plan to the Crescent City Redevelopment Plan.

1976 General Plan

The existing 1976 Crescent City General Plan is a brief document consisting of a seven page chapter in the County's 1976 General Plan that relies heavily on individual elements in the County's Plan (i.e., circulation, harbor, housing, noise, and seismic safety and general safety). The only discrete policies in the chapter cover three topics: Growth and Development; Community Design and Appearance; and Economic Environment. The chapter also describes ten General Plan Map designations that combine with the plan map for the Crescent City Harbor District.

The following elements are included in the 1976 Crescent City General Plan:

Background Report

- Land Use
- Central Business District
- City Utilities
- Circulation
- Crescent City Harbor
- Housing
- Noise
- Seismic Safety and Safety

Policy Document

- Growth and Development
- Community Design and Appearance
- Economic Environment

Housing Element

The City of Crescent City and Del Norte County adopted a joint housing element, the *City of Crescent City & County of Del Norte Housing Element*, on August 24, 1992. The *Housing Element* includes six sections. The first section provides background information on the community, including population growth trends, and on the economy and households in Del Norte County. The second section provides background information on housing, including discussions of housing stock, housing conditions, housing market areas, energy conservation, and an assessment of the 1984 Housing Element. The next section assesses housing needs, including special needs, assisted rental housing at risk of conversion to market-rate housing, and emergency and homeless shelter needs. The fourth section discusses vacant land and development sites, including separate discussions of vacant land in unincorporated Del Norte County and vacant land in incorporated Crescent City. This section also discusses surplus lands, homeless shelter lands, and analyzes the availability of services. The fifth section describes development constraints on housing, including State and Federal governmental constraints, local governmental constraints, and non-governmental constraints.



The final section includes the goals, policies, and quantified objectives of the *Housing Element* for 1992 through 1997.

Adoption of the 1992 *Housing Element* supersedes the 1984 *Housing Element* included under the General Plan cover. The 1984 element superseded the City's first housing element, adopted in 1977. According to amended State law, Crescent City and Del Norte County's current Housing Element does not have to be updated until 2002.

Local Coastal Plan

Management of Crescent City's coastline is carried out through a partnership between state and local governments. These governmental bodies work together to implement California Coastal Act policies. This is accomplished primarily through the preparation of local coastal programs (LCPs) that are required to be completed by each of the 15 counties and 58 cities located in whole or in part in the coastal zone. Completed LCPs are submitted to the California Coastal Commission for review and approval. An LCP includes a land use plan (LUP) which is the relevant portion of the local general plan, including any maps necessary to administer it, and the zoning ordinances, zoning district maps, and other legal instruments necessary to implement the land use plan. Coastal Act policies are the standards by which the Commission evaluates the adequacy of LCPs.

After certification of an LCP, coastal development permit authority is delegated to the appropriate local government. The Commission retains original permit jurisdiction over certain specified lands (public trust lands such as tidelands) and has appellate authority over development approved by local government in specified geographic areas. Any new development in areas of the Commission's retained original jurisdiction can only be granted a coastal development permit by the Commission. An appealed local coastal permit decision is stayed until the Commission acts on the appeal.

The *Crescent City Local Coastal Plan (LCP)* is a portion of the Local Coastal Program certified by the California Coastal Commission. The *Crescent City Local Coastal Plan (LCP)* was adopted February 1984 and updated June 1997. The *Harbor Plan*, discussed separately, also constitutes part of the certified LCP. The LCP includes the following chapters:

- Land Use (including Growth and Development, Community Design and Appearance, Economic Development);
- Public Access (to shoreline areas);
- Recreation and Visitor-Serving Facilities;
- Coastal Visual Resources and Special Communities;
- Environmentally Sensitive Habitat Areas/Water and Marine Resources;
- Diking, Dredging, Filling, and Shoreline Structures;
- Industrial Development and Energy Facilities; and
- Public Works.

Each chapter includes a background discussion, summarizes the Coastal Act policies for the subject area, lists existing local policies, and sets out LCP policies and specific area policies and recommendations. The LCP also includes a land use diagram for the Coastal Zone planning area. Within the Coastal Zone, the 1976



General Plan land use provisions apply, while the Coastal Commission retains direct land use permitting authority over designated areas.

HARBOR PORT LAND USE PLAN

The *Crescent City Harbor Port Land Use Plan (Harbor Plan)*, adopted in 1976, is a part of the County's certified LCP. The *Harbor Plan* addresses land use and policy for the portion of the Crescent City harbor area under Del Norte County's jurisdiction. The portion of the harbor within the city limits is addressed in Crescent City's LCP.

The *Harbor Plan* describes existing harbor plans and programs, existing harbor facilities and development constraints, describes the land and water area requirements for optimum harbor development, establishes policies and criteria for future land use within the harbor, and sets out a land use plan and implementation program for physical development of the harbor.

ZONING

Under State law, cities and counties have broad latitude to establishing zoning standards and procedures. Outside of a general requirement for open space zoning and several special requirements governing residential zoning, State law broadly establishes the scope of zoning regulation and sets minimum standards for adoption and administration. One key requirement is that zoning be consistent with the general plan.

Crescent City's zoning provisions are contained in two documents. The basic framework of Crescent City's zoning regulations are contained in the City's *Zoning Ordinance*, which was originally adopted in 1964. Subsequently, the City adopted a *Coastal Zoning Ordinance* in 1983 as part of its LCP to comply with the requirements of the California Coastal Act. The *Zoning Ordinance* and the *Coastal Zoning Ordinance* have similar formats and include many of the same zoning districts. Generally, each zoning district defines the intent or purpose of the district, lists the permitted uses, lists uses permitted with a conditional use permit, and then defines the standards and limits for building height, lot area, back yard, and side yard setbacks, and other requirements within each district.

Zoning Districts

The City's *Zoning Ordinance* contains 13 basic zoning designations with another designation likely to be adopted in the spring of 1998. These districts are intended to implement the County's General Plan for areas outside the coastal zone.

Residential Zones

The *City of Crescent City Zoning Ordinance* contains five separate zoning districts. R-1 (Single-Family District) and R-1B (Single-Family Beach District) provide low density concentrations of single-family housing suitable for family living. The R-1B district differs from R-1 in that it is designed to offer greater open space and visibility than the typical R-1 lot. The zoning district R-2 (Two-Family District) is comparable to the R-1 district except that it allows two family dwellings. The R-3 Multi-Family District provides areas for both low (single-family) and high densities (apartments and townhouses) of dwelling units together with specific ancillary and complementary uses. The fifth residential district, RP (Residential-



Professional District), provides for concentrations of commercial and professional offices outside of commercial districts. All residential uses are permitted under this category.

Commercial

Crescent City contains five commercial districts. The Limited Commercial District (C-1) is intended to accommodate the daily retail business needs of the community. This District includes eating and drinking establishments, service stations, retail stores, and motels and hotels. The second commercial zoning district, C-2 General Commercial District is intended to serve as the central trading area to the city and provide services that enhance the dominant features of the central area. The District (C-2) provides opportunities for permanent shopping goods, financing and business, as well as entertainment. Waterfront Commercial District (CW) provides visitor-serving and recreational uses, retail stores and offices, community facilities and institutions, and uses catering to tourists. Intended to provide services to patrons using the highways, Highway Service (HW) District is personal service or recreational in nature and provides high quality and convenient service to travelers and tourists. The Commercial Manufacturing District (CM) incorporates both heavy commercial-type uses as well as semi-industrial uses. The CM District is intended primarily for establishments engaged in servicing equipment, materials and products, but do not necessarily require the manufacturing, assembly, packaging, or processing of articles or merchandise.

Industrial

The Manufacturing District (M) provides for uses that are involved in the assembly, repair, and fabrication of goods and products. The Manufacturing District allows all commercial activities but completely restricts residential uses within the district. The second district, Industrial Performance District (M-P) is intended to accommodate all industrial uses that meet certain performance requirements. This district provides for more aesthetically pleasing surroundings to make an easier transition with more restrictive adjacent uses.

As of March 1998, there is no land within the city designated as either M or MP.

Other Categories

Other zones designated for uses other than residential, commercial, or industrial include the O (Open Space) District. The O District provides permanent open spaces which are necessary to safeguard the health, safety, and welfare of the people. It also provides spaces for the location and preservation of unusual land masses, historical sites, and areas which provide energy, water, and recreational activities.



Zoning Standards

Table 2-1 summarizes the Crescent City zoning development standards.

TABLE 2-1 SUMMARY OF ZONING DEVELOPMENT STANDARDS City of Crescent City 1997							
Zoning District	Min. Lot Area per Dwelling	Allowable FAR	Maximum Height	Minimum Setback			Second Units Allowed
				Front Yard Setback	Rear Yard Setback	Combined Side Yard	
R-1	6,000 sq. ft. ¹	.50	35 ft.	20 ft.	20 ft.	20 ft.	Yes
R-1B	6,000 sq. ft. with 75 ft. Frontage	.50	25 ft.	20 ft.	20 ft.	20 ft.	Yes
R-2	6,000 sq. ft.	.50	35 ft.	20 ft.	10 ft.	20 ft.	Yes
R-3	6,000 sq. ft.	.65	35 ft.	10 ft.	10 ft.	10 ft.	Yes
RP	6,000 sq. ft. for res., no min. for non-res.	None	35 feet	20 ft.	10 ft.	10 ft.	Yes
C-1	No minimum	No maximum	35 ft.	None ²	10 ft.	None, 10 ft. if abuts RP	Yes
C-2	No minimum	No maximum	45 ft.	None ²	10 ft.	None, 10 ft. if abuts RP	Yes
CW	No minimum	No maximum	70 ft.	None ²	10 ft.	None, 10 ft. if abuts RP	CUP
HS	No minimum	No maximum	35 ft.	35 ft.	10 ft.	None, 10 ft. if abuts RP	Yes
C-M	No minimum	No maximum	45 ft.	None ²	10 ft.	None, 10 ft. if abuts RP	Yes
M	No minimum	No maximum	55 ft.	None ²	20 ft.	None, 20 ft. if abuts RP	Yes
M-P	One half acre	--	45 ft., 55 ft.	10 ft.	10 ft.	10 ft.	Yes
O	No min. Or max	.10	No min. Or max.	No min. Or max	No min. Or max	No min. Or max	--
Notes: 1. Unless previously legally subdivided or a planning commission approved of a lot split or parcel map. 2. If the said district abuts a district with greater requirements, the front yard shall conform to the more restrictive zone Source: Crescent City Zoning Ordinance							



EXISTING LAND USE

The City of Crescent City compiled a parcel-based inventory of existing land uses in Crescent City. The General Plan consultants entered this parcel-based information into a land use database.

Table 2-2 summarizes existing land use within the Crescent City city limits based on the land use database. The predominate land use in the city is commercial land at 29.8 percent. Following closely behind commercial is parkland and open space with 24.1 percent. This high amount of open space can be attributed to the Beachfront Park which has approximately 180 acres of land. Residential land has the third largest percentage of total land in Crescent City with 22.9 percent (12.5 percent for single family and 10.4 for multi-family. Currently (May 2000), there is no industrial land within the city limits.

TABLE 2-2			
EXISTING LAND USE			
City of Crescent City			
1999			
Category	Net Acreage	% of Total	Units
Single Family Residential	100.5	12.5%	761
Multi-Family Residential	83.5	10.4%	1,142
Commercial	239.8	29.8%	n/a
Harbor Related	13.6	1.7%	n/a
Industrial	0	0%	n/a
Public	26.4	3.3%	n/a
Parkland/Open Space	194	24.1%	n/a
Unaccounted Land	59.7	7.4%	n/a
Vacant Land	86.3	10.7%	n/a
TOTAL	803.8	100.0%	1,903
Source: Crescent City Planning Department Land Use Database, May 2000.			



VACANT AND UNDERUTILIZED LAND

To derive information on vacant land and underutilized land (i.e., not developed to its permitted capacity) within the city, the General Plan Consultants relied on a citywide parcel-based database containing information on the development status of property within the city limits. The acreage column in Table 2-3 summarizes the amount of land that was assumed to be available for development under each land use type. Table 2-3 shows that the city has a potential for 295 new units within the current (July 2000) city limits. Table 2-3 also shows that there is considerable potential for harbor and commercial uses (approximately 1.6 million square feet of vacant commercial and over 300,000 square feet of underutilized commercial) and no potential for industrial uses since there is no land designated as industrial within the city limits.

TABLE 2-3				
VACANT AND UNDERUTILIZED LAND Crescent City City Limits				
RESIDENTIAL				
Land Use Designation	Acres		Dwelling Units	
	Vacant	Underutilized	Vacant	Underutilized
Single Family Res.	2.89	1.75	12	7
Multi-Family Res.	13.8	2.33	237	39
Mobilehome Park	0	0	0	0
NON-RESIDENTIAL				
Land Use Designation	Acres		Square Feet	
	Vacant	Underutilized	Vacant	Underutilized
<i>Commercial</i>				
Office Commercial	3.16	3.02	89,589	65,687
Retail/General Commercial	44.73	12.32	779,271	187,722
Harbor Related	21.00	3.23	730,414	63,275
<i>Industrial</i>				
Industrial	0	0	0	0
Source: Mintier & Associates, 1999.				



LOCAL AGENCY FORMATION COMMISSION, SPHERE OF INFLUENCE, AND ANNEXATION

In 1985, the various State laws regulating city and special district organization and annexations were consolidated in the Cortese-Knox Local Government Reorganization Act (*Government Code Section 56000 et. seq.*).

Local Agency Formation Commission

The 1963 Knox-Nisbet Act, which was superseded by Cortese-Knox, created local agency formation commissions (LAFCOs) in each county in California to regulate the organization and extension of services provided by cities and special districts. The Act declares that “among the purposes of the commission are the discouragement of urban sprawl and encouragement of the orderly formation and development of local agencies based upon local conditions and circumstances. One of the objectives of the commission is to make studies and to obtain and furnish information which will contribute to the logical and reasonable development of local agencies in each county and to shape the development of local agencies so as to advantageously provide for the present and future needs of each county and its communities “ (*Government Code Section 56301*). In meeting these responsibilities, each LAFCO is required “to review and approve or disapprove, with or without amendment, wholly, partially, or conditionally, proposals for changes of organization or reorganization” (*Government Code Section 56375 (a)*).

According to Section 56021 of the *Government Code*, “change of organization” means any of the following:

- a city incorporation;
- a district formation;
- an annexation to, or detachment from, a city or district;
- a disincorporation of a city;
- a district dissolution;
- a consolidation of cities or special districts; or
- a merger or establishment of a subsidiary district.

The special districts that fall under LAFCO jurisdiction are defined in *Government Code Section 56036*. School districts and redevelopment agencies, among others, are excluded within this definition and are, therefore, not subject to LAFCO review.

In addition to the regulatory responsibilities of LAFCO, the commission is empowered to initiate and to make studies of existing governmental agencies. These studies include, but are not limited to, inventorying local agencies and determining their maximum service areas and service capabilities.

Sphere of Influence

As the basis in part for making decisions about organizational changes and annexations, LAFCO must adopt a “sphere of influence” (SOI) for each local agency subject to LAFCO regulation. The Cortese/Knox Act defines a sphere of influence as “a plan for the probable ultimate physical boundaries and service area of a local agency” (*Government Code Section 56076*). In practice, “ultimate” is typically defined as 20 years. The sphere identifies the area available to a city for future annexation. However, unless another arrangement has been made, the city has no actual authority over land outside its city limits. Although a city may



eventually annex the entire area within the sphere, the city is not required to do so. The principal purpose of the sphere of influence is to provide a specific geographic area that will help the city plan for the future.

In determining the SOI of each local agency, LAFCO must consider and prepare a written statement of its determinations with respect to each of the following:

- the present and planned land uses in the area, including agricultural and open space lands;
- the present and probable need for public facilities and services in the area;
- the present capacity of public facilities and the adequacy of services which the agency provides or is authorized to provide; and
- the existence of any social or economic communities of interest in the area if the commission determines that they are relevant to the agency (*Government Code* Section 56425).

Once these spheres are adopted, LAFCO decisions must be consistent with the applicable SOI for the affected agency (*Government Code* Section 56375.5). For example, LAFCO may not approve any City annexation outside the adopted SOI for the City of Crescent City.

Crescent City's sphere of influence is illustrated in Figure 2-1.

ANNEXATION PROCESS

Annexations to cities are regulated by the Cortese-Knox Act. Generally, any land that is contiguous to a city and within its SOI may be annexed to the city if the annexation does not result in an island of unincorporated land or in narrow strips of land.

Proponents of an annexation must secure the approval of LAFCO. Annexation proceedings may be initiated by application to LAFCO either by city resolution or through petition of landowners or registered voters, after securing City approval of pre-zoning for the area. LAFCO holds a hearing on the proposed annexation, considers the proposal, staff report, testimony of affected agencies and parties, service plan, and environmental documents, and approves or disapproves the annexation proposal. Upon LAFCO approval, unless the city has been authorized to proceed without notice and hearing, the city must conduct a protest hearing. At the protest hearing, the City Council must either approve the proposal, terminate the proposal, or call for an election based on the proportion of written protests from registered voters and landowners.

In inhabited territory (territory with at least 12 registered voters), the City Council must order the change if written protests have been filed by less than 25 percent of the registered voters or less than 25 percent of the number of land owners who also own 25 percent of assessed land value within the affected territory. The proposal must be terminated by the City Council if written protests have been filed by more than 50 percent of the voters in the affected territory. The City Council must send the proposal to special election if written protest is filed by 25 to 50 percent of voters or landowners of inhabited territory (*Government Code* §57075 (b)). Annexation proposals disapproved by LAFCO, terminated by written protest, or terminated by special election generally must wait at least one year before a similar proposal is resubmitted to LAFCO. In some cases, however, LAFCO will deny the annexation without prejudice, allowing resubmission within a year.



OTHER PLANS AND LAND USE REGULATIONS AFFECTING CRESCENT CITY

Del Norte County General Plan

Adopted in 1976 in conjunction with the *Crescent City General Plan*, the *Del Norte County General Plan* satisfies the State mandate to prepare a comprehensive general plan. The General Plan was developed with assistance from the Department of Housing and Urban Development and with the cooperation of local, State, and Federal agencies. Not including the housing element which was adopted in 1992, the General Plan has nine elements including: Circulation, Land Use, Scenic Highways, Noise, Seismic Safety and Safety, Conservation and Open Space, Recreation Element, Land Subdivisions, and Mobilehomes.

Del Norte County Regional Transportation Plan

Under California law, regional planning entities are required to develop Regional Transportation Plans (RTPs) to be used as a planning and development guide. In Del Norte County, the Del Norte County Local Transportation Commission is responsible for preparing the plan. The plan inventories existing transportation systems and describes the development needs of several forms of transportation, including automobiles, buses, trucks, aircraft, ships, bicycles, and pedestrians. The overall intent of the plan is to provide a direction for future transportation improvements in Del Norte County.

Downtown Revitalization Plan

The Downtown Revitalization Plan was prepared in October 1996, by the Crescent City Redevelopment Agency with assistance from the Crescent City Revitalization Task Force and members of the Business Improvement District. The goal of this plan is to identify specific projects that can, when properly implemented, improve the business climate of the downtown area. The Downtown Revitalization Plan represents an "action plan" that attempts to develop four objectives: development of a theme for the downtown; development of a comprehensive long-term strategy; building a public/private partnership and interagency partnerships; and creation of recommendations for near-term actions and investments.

Crescent City Harbor Port Land Use Plan

The Crescent City Harbor Board of Harbor Commissioners adopted the Crescent City Harbor Port Land Use Plan in 1976. The Plan was subsequently revised in February 1984 and October 1986. The Plan is a part of the County's certified Local Coastal Program and serves as a guide for physical development within the Crescent City Harbor. The Harbor Plan addresses land use and policy for the portion of the Crescent City harbor area under Del Norte County's jurisdiction. Its purpose is to provide a framework for development of the harbor that is consistent with the policies and provisions of the California Coastal Act. The Harbor Plan describes existing Harbor plans and programs, existing Harbor facilities and development constraints, describes the land and water area requirements for optimum Harbor development, establishes policies and criteria for future land use within the Harbor, and sets out a land use plan and implementation program for physical development of the harbor.



Crescent City Harbor Waterfront Development Plan

The Harbor Waterfront Development Plan (still in draft form) was developed by the Del Norte Economic Development Corporation in March 1996, in conjunction with the Harbor Project Task Force, local stakeholders, and other members of the community. The overall purpose of this document is to strengthen and develop the tremendous potential of the harbor. The plan accomplishes this by developing a revitalization strategy that seeks to strengthen the working harbor, while expanding the commercial and tourism-related economic opportunities. The Harbor Development Plan provides planning policies, programs, and implementation measures that seek to improve harbor facilities and conditions (see Figure 2-2); provide visitor-serving attractions and facilities; make the harbor a tourist destination; and provide environmental enhancement and recreation. Currently (March 1998), the Plan has been accepted by the City and County from the preparer and unofficially adopted by the Harbor Commission; however, it cannot receive final review until the completion of an environmental impact document.

REGIONAL, STATE, AND FEDERAL REGULATORY AGENCIES

Del Norte County

The City of Crescent City has historically collaborated with Del Norte County in planning efforts. In 1976, the City adopted a General Plan as part of a joint effort with the County. Similarly, the City and County worked together to adopt the *City of Crescent City & County of Del Norte Housing Element* in August 1992.

Del Norte County Local Transportation Commission

The Del Norte Local Transportation Commission is designated as the Regional Transportation Agency for Del Norte County. The Commission prepared major transportation documents for Del Norte County including the 1990 Del Norte County Regional Transportation Plan, the Del Norte County and Crescent City Bicycle Facilities Plan, and the Del Norte County Comprehensive Public Transit Service Plan.

Del Norte County Local Agency Formation Commission

The Del Norte County Local Agency Formation Commission (LAFCO), which is operated by the Del Norte County Community Development Department, has the primary role of reviewing and making decisions regarding boundary change proposals for cities and special districts. These boundary changes include incorporations, annexations, dissolutions, detachments, and the “spheres of influence.” Although it has no direct land use power, LAFCO exercises significant influence in the land use planning process in that it determines which local government jurisdiction will have responsibility for planning new areas.



California Coastal Commission

The California Coastal Commission is responsible for certifying local coastal programs (LCP) and amendments made to LCPs by the governing jurisdiction. With certain exceptions, development within the Coastal Zone is subject to a coastal development permit issued by either a local government pursuant to a certified LCP or, where there is no certified LCP, by the Coastal Commission pursuant to the Coastal Act. Local government permit decisions regarding specific project types may be appealed to the Commission. Regardless of the local jurisdiction's LCP status, the Commission retains permanent jurisdiction over development on coastal zone tidelands, submerged lands, and public trust lands.

California Coastal Conservancy

The California Coastal Conservancy is an independent State agency with a governing board appointed by the Governor and the State Legislature. The Coastal Conservancy was created to resolve land use conflicts on the coast; to help implement local coastal plans; to increase and improve public access to the California Coast; to protect and restore coastal wetlands, streams, and watersheds; to acquire and hold land for purposes within the Coastal Act; to restore urban waterfronts for public use and coastal-dependent activities; and to protect agricultural lands.

California Department of Transportation

California Department of Transportation (Caltrans) has authority over all State highway and freeway right-of-ways, including easements, and undeveloped rights-of-way which have been acquired in anticipation of future construction. Any project which proposes to construct a road connection or perform earthwork within the right-of-way of a State highway must obtain an Encroachment Permit from Caltrans.

California State Lands Commission

The California State Lands Commission is responsible for granting two types of permits that pertain to land use. The first, the Dredging Permit, is required for any proposal to dredge lands under the jurisdiction of the State Lands Commission. The second, the Marine Salvage Permit, is required for any proposal to conduct salvage operations on submerged lands under the jurisdiction of the State Lands Commission. In addition to these two permits, the State Lands Commission is responsible for regulating all marine oil terminals through its Marine Facilities Program and for issuing Land Use Leases and otherwise regulating the use of tidelands and submerged lands under its jurisdiction to ensure that the proposed land uses are consistent with a public purpose.

California Department of Fish and Game

The Department of Fish and Game has jurisdiction over all "waters of the state," including lakes, streams, or rivers containing fish or wildlife resources. The Department of Fish and Game has authority over two permitting processes. The first, Stream Alteration Agreements, are required for projects which alter the flow of any lake, stream, or river in the state. The second, Suction Dredging Permits, are required for projects involving suction or vacuum dredging activities in state waterways. The Department is also responsible for protecting coastal biological resources and regulating aquaculture activities in coastal areas, including



Crescent City Harbor. The Department also reviews projects and comments on the potential impacts to fish and wildlife resources in general, and identifies potential impacts to endangered or threatened plant or animal species under the California Endangered Species Act and the Coastal Act. The Department is required to issue a written finding indicating whether a proposed project would “jeopardize” the continued existence of any endangered or threatened species, or result in the destruction or adverse modification of habitats essential to the continued species existence. If the Department makes this “jeopardy” finding, it is then required to develop “reasonable and prudent alternatives” to conserve the endangered or threatened species.

United States Environmental Protection Agency

The U.S. Environmental Protection Agency (EPA) has review authority over environmental documents that are prepared and circulated pursuant to the National Environmental Protection Act (NEPA). The EPA can comment on the draft environmental impact statements (EISs) and NEPA procedures require filing of final EISs with the EPA. The EPA has the authority over development projects pursuant to Section 404 of the Clean Water Act, which overlaps with the Army Corps of Engineers’ authority. Generally, the EPA reviews Department of Army Permits for compliance with guidelines implement Section 404 requirements. The EPA can veto an Army Corps of Engineers decision on a Department of Army permit in order to prohibit discharges into waterways.

United States Fish and Wildlife Service

The United States Fish and Wildlife Service must be consulted on all Federal projects, such as the Army Corps of Engineers-Department of Army Permit, pursuant to the Fish and Wildlife Coordination Act. The Service comments on potential project effects on Federally-listed “endangered or threatened” plant and animal species under the Federal Endangered Species Act. In reviewing a project, the Fish and Wildlife Service could issue a “jeopardy” determination and would propose reasonable alternatives to the permitting agency similar to the State Department of Fish and Game process. The Fish and Wildlife Service also comments generally on potential effects on fish and wildlife resources.



2.3 POPULATION

If a city is to effectively establish land use patterns and set policies regarding housing and public facilities and services, it must first have a clear understanding of who lives in the community and how the population has changed and is expected to change in the future. This section reviews historical population trends, current demographics, and population projections for the City of Crescent City. Most of the information contained in this section is taken from the 1990 U.S. Census and the California Department of Finance. This section also cites studies conducted by Del Norte County.

POPULATION GROWTH IN CRESCENT CITY

The City of Crescent City was founded in 1853 when F.E. Weston set up a small mill to cut wood for the lumbering industry. One year later the city incorporated. Since then the city and the surrounding area has seen many rises and declines in its population. Table 2-4 shows the changes in population from its inception to 1997.

From the early 1900s to the 1990s, the Crescent City area has seen significant population changes. In three separate decades the city's population nearly doubled. The largest increases were from 1900 to 1910 (37.3 percent), 1920 to 1930 (44.5 percent), and 1950 to 1960 (42.3 percent). The most significant decrease occurred between 1930 to 1940. Much of this fluctuation was due to the boom or bust nature of the logging industry which has led to several plant openings and closings over the years. In addition, there has been a historically high turn-over and mobility, reflecting high seasonal unemployment. Much of the fluctuation in growth leveled off in the 1970s and 1980s.

In the last decade, the population has remained relatively constant. The only exception is when the City annexed the Pelican Bay State Prison in 1992 (see Table 2-5). The city's population went from 4,350 to 8,000, which technically nearly doubled the population. However, this growth in group quarters population has done little to change the overall development patterns of the city and the provision of city services. If the last five years are any indication, the city's urban population (without Pelican Bay) is likely to show minimal growth increases. This pattern reflects a more stable core of population, mainly families and retirees moving to Crescent City for its amenities and small town environment. In 1997, the population of Crescent City was at 8,325 which is nearly 30 percent of the county's total population.



TABLE 2-4
HISTORICAL POPULATION GROWTH
City of Crescent City, Del Norte County, and California
1860-1990

	City Crescent City		Del Norte County		California	
Year	Population*	% Change	Population*	% Change	Population	% Change
1860	638	n/a	n/a	n/a	n/a	n/a
1870	458	n/a	n/a	n/a	n/a	n/a
1880	n/a	n/a	n/a	n/a	n/a	n/a
1890	907	n/a	n/a	n/a	n/a	n/a
1900	699	-29.8%	2,408	n/a	1,485,053	n/a
1910	1,114	37.3%	2,417	0.4%	2,377,549	37.5%
1920	955	-16.7%	2,759	12.4%	3,426,861	30.6%
1930	1,720	44.5%	4,739	41.78%	5,677,251	39.6%
1940	1,363	-26.2%	4,745	0.1%	6,907,387	17.8%
1950	1,706	20.1%	8,078	41.3%	10,586,223	34.8%
1960	2,958	42.3%	17,771	54.5%	15,717,204	32.7%
1970	2,586	-14.4%	14,580	-21.9%	19,953,134	21.2%
1980	3,075	15.9%	18,217	20.0%	23,667,902	15.7%
1990	4,380	29.8%	21,029	13.4%	29,760,021	20.5%
1991	4,350	-0.7%	21,646	2.9%	30,296,000	1.8%
1992	4,744	8.3%	22,458	3.7%	30,884,740	2.0%
1993	4,676	-1.4%	22,643	0.9%	31,303,458	1.3%
1994	4,797	2.5%	22,893	1.1%	31,661,028	1.2%
1995	4,885	1.8%	23,458	2.5%	31,910,064	0.8%
1996	4,827	-1.2%	23,546	0.4%	32,222,878	1.1%
1997	4,653	-3.7%	24,034	2.1%	32,608,891	1.2%

* Excludes Pelican Bay State Prison population.

Source: California Department of Finance, Population and Housing Estimates (Revised April 1997); U.S. Census Bureau, 1990.



TABLE 2-5

**PELICAN BAY STATE PRISON
POPULATION GROWTH
City of Crescent City
1997**

Year	Pelican Bay State Prison			City of Crescent City			Prison and Crescent City Total
	Population	Increase/ Decrease	Percentage	Population	Increase/ Decrease	Percentage	
1992	3,482	n/a	n/a	4,744	201	4.42%	8,226
1993	3,837	355	10.20%	4,676	(68)	(1.43%)	8,513
1994	4,008	171	4.46%	4,797	121	2.59%	8,805
1995	3,594	(414)	-10.33%	4,885	88	1.83%	8,479
1996	3,478	(116)	-3.23%	4,827	(58)	(1.19%)	8,305
1997	3,681	203	5.84%	4,653	(174)	(3.60)	8,334

Source: Department of Corrections, TPOP-1 Report, 1997.

POPULATION PROJECTIONS

Population projections or forecasts form the basis for almost all planning activities. Community planning can, therefore, only be as effective as the ability of local officials to anticipate population growth. The California Department of Finance (DOF) is responsible for periodically preparing forecasts of population growth for all of the state's 58 counties. Although projections for Crescent City are not available, population projections for Del Norte County serve as a good indicator of the city's growth since Crescent City represents such a large portion of the county's population. The most recent DOF projections for the county, which were completed in April 1997, represent interim revised projections that include ten-year estimates through the year 2020. Final state and county projection numbers will be published sometime in mid 1998 and run to the year 2040.

Table 2-6 presents alternative projections based on two different assumptions. The first set is the DOF's projections, which as described above reflect a level of growth that exceeds actual growth through 1996. According to DOF, Del Norte County's population is projected to grow to 51,300 by 2020. The second set of projections shown in the second column simply reflects a 2.0 percent annually-compounded growth rate, which is consistent with Del Norte County's recent historical rate. Under this alternative the county is expected to grow to a population of 42,042 by the 2020. In each set of projections, an estimated dwelling unit demand is presented based on the county's 1996 average household size of 2.6 residents. DOF estimates a need for 9,154 additional dwelling units by the year 2020, while the historical growth rate numbers show a projected increase of 5,593 additional dwelling units.



TABLE 2-6
POPULATION GROWTH SCENARIOS
Del Norte County
1996 to 2020

Year	Population/Dwelling Unit Change	DOF	Historical 2.0% Growth Rate*
1996	1996 Actual Population	27,500	27,500
2000	Projected 2000 Population	31,800	29,470
	1996 to 2000 Population Change	4,300	1,970
	1996 to 2000 New DU's (2.6 PPH)	1,654	758
	1996 to 2000 Percentage Change	15.6%	7.2%
	1996 to 2000 Average Annual Change	3.70%	2.0%
2010	Projected 2010 Population	41,600	35,136
	2000 to 2010 Population Change	9,800	5,666
	2000 to 2010 New DU's (2.6 PPH)	3,769	2,179
	2000 to 2010 Percentage Change	44.3%	20.6%
	2000 to 2010 Average Annual Change	2.72%	2.0%
2020	Projected 2020 Population	51,300	42,042
	2010 to 2020 Population Change	9,700	6,906
	2010 to 2020 New DU's (2.6 PPH)	3,731	2,656
	2010 to 2020 Percentage Change	23.3%	25.1%
	2010 to 2020 Average Annual Change	2.1%	2.0%
1996 to 2020	1996 to 2020 Population Change	23,800	14,542
	1996 to 2020 New DU's (2.6 PPH)	9,154	5,593
	1996 to 2020 Percentage Change	86.5%	52.9%
	1996 to 2020 Average Annual Change	2.6%	2.0%

* Prison population was excluded when calculating average annual change.

Source: California Department of Finance, 1997; J. Laurence Mintier & Associates, December 1997.



RACIAL AND ETHNIC COMPOSITION

According to the 1990 U.S. Census, Crescent City has a predominantly Caucasian community. As Table 2-7 indicates, nearly 90 percent of the city is Caucasian, while the county shows a comparable percentage of nearly 86 percent. Those percentages are significantly higher than the state percentage of 69.1 percent. Among other ethnic categories such as Black, Hispanic, Asian, and Other, Crescent City falls far below the rest of the state. However, Crescent City shows a significant population of Native Americans. With a Native American population of 5.2 percent, Crescent City is significantly higher than the rest of California (0.8 percent).

The Crescent City unincorporated area shows significant differences compared to the incorporated areas in two categories: Blacks and Hispanics. Almost all of the black population was in the Crescent City unincorporated area of Del Norte County, which was home to 804 of the 858 (93.7 percent) black residents in the county. Similarly, nearly 61 percent of the Hispanic community resided in the Crescent City unincorporated area. In the unincorporated Crescent City area, Hispanics made up 11 percent of the population, while in Crescent City Hispanics made up only 7.6 percent of the city's population.

With the annexation of Pelican Bay State Prison in 1992, the ethnic composition of the city's residents became more diverse. Table 2-8 shows the ethnic distribution of the Prison's employees and inmates. As the table indicates, ethnic distribution of the combined employees and inmates differed dramatically from the distribution reported in the 1990 U.S. Census for Crescent City's population as a whole, largely as a result of the inmates. The distribution of the employee population was, however, similar to the overall population; it is also likely that the employees' families reflected this distribution, so that the overall prison-associated population did not differ as dramatically from the balance of the county's population as Table 2-7 suggests.



TABLE 2 - 7
ETHNIC COMPOSITION
Crescent City, Del Norte County, and California
1990

Ethnic Group	Crescent City		Crescent City (unincorporated)		Del Norte County		California	
	Total	% of Total	Total	% of Total	Total	% of Total	Total	% of Total
White	3,914	89.4%	11,016	84.9%	20,210	86.2%	20,555,653	69.1%
Black	27	0.6%	777	6.0%	858	3.7%	2,198,766	7.4%
American Indian/Eskimo/ Aleut	229	5.2%	669	5.2%	1,494	6.4%	248,929	0.8%
Asian/Pacific Islander	137	3.1%	270	2.1%	450	1.9%	2,847,835	9.6%
Other	73	1.8%	246	1.9%	448	1.9%	3,908,838	13.1%
TOTAL	4,380	100.0%	12,978	100.0%	23,460	100.0%	29,760,021	100.0%
Hispanic Origin*	334	7.6%	1,463	11.3%	2,414	10.3%	7,557,550	25.4%

*Persons of Hispanic origin are included under other ethnic categories (e.g. White, Other).

Source: U.S. Census Bureau, 1990.



TABLE 2 - 8

**ETHNICITY OF PELICAN BAY EMPLOYEES AND INMATES
May 1996**

Ethnicity	Employees		Inmates		Total	
	Number	% of Total	Number	% of Total	Number	% of Total
White	1,089	81.4%	853	24.0%	1,942	39.7%
Black	26	1.9%	1,101	31.0%	1,127	23.1%
American Indian/Eskimo /Aleut	15	1.1%	36	1.0%	51	1.0%
Asian/Pacific Islander	30	2.2%	0	0.0%	30	0.6%
Hispanic	105	7.85	1,421	40.0%	1,526	31.2%
Other	73	5.5%	142	4.0%	215	4.4%
Total	1,338	100.0%	3,553	100.0%	4,891	100.0%

Source: Pelican Bay State Prison Community Resources Division, May 17, 1996.

AGE AND GENDER BREAKDOWN**Age Distribution**

Age structure is a particularly important planning consideration because different age segments of the population require different types of services. A younger population will likely demand more opportunities for active recreation, whereas an older population will likely call for more passive recreational facilities. Different age groups also require different considerations when it comes to housing. An older population will generally have less need for the type of large housing units that a population with a large number of residents of child-bearing age will need. Table 2-9 shows the 1990 age distribution of Crescent City compared to that of Del Norte County and the State of California.

Table 2-8 shows that Crescent City has a much younger and more elderly population than both Del Norte County and the State of California. The percent of Crescent City residents 17 years old or younger was 31.3 percent of the total population. This percentage is significantly higher than the county's percentage of 26.9 percent and the state's 26.0 percent. Both the state (63.5 percent) and Del Norte County (60.3 percent) have a higher percentage of adults aged 18 to 65 than Crescent City (55.2 percent). Crescent City has a higher percentage of adults aged 65 and older (13.5 percent) than both Del Norte County (12.8 percent) and the state (10.5 percent).



TABLE 2-9
AGE DISTRIBUTION
Crescent City, Del Norte County, and California
1990

Age Group	Crescent City		Del Norte County		California	
	Number	% of Total	Number	% of Total	Number	% of Total
Under 5	394	9.0%	1,757	7.5%	2,376,474	8.0%
5 to 17	977	22.3%	4,549	19.4%	5,363,005	18.0%
Subtotal, 0 to 17	1,371	31.3%	6,306	26.9%	7,739,479	26.0%
18 to 24	373	8.5%	2,063	8.8%	3,325,043	11.2%
25 to 34	696	15.9%	4,572	19.5%	5,739,293	19.3%
35 to 44	674	15.4%	3,194	13.6%	4,646,815	15.6%
45 to 54	377	8.6%	2,361	10.1%	2,955,981	9.9%
55 to 64	297	6.8%	1,961	8.4%	2,231,551	7.5%
Subtotal, 18 to 64	2,417	55.2%	14,151	60.3%	18,898,683	63.5%
65 to 69	186	4.2%	1,005	4.3%	1,055,906	3.5%
70 to 74	157	3.6%	887	3.8%	809,511	2.7%
75 and over	249	5.7%	1,111	4.7%	1,256,442	4.2%
Subtotal, 65 and older	592	13.5%	3,003	12.8%	3,121,859	10.5%
TOTAL	4,380	100.0%	23,460	100.0%	29,760,021	100.0%

Source: U.S. Census Bureau, 1990.

Gender

Table 2-10 shows the gender breakdown by age in Crescent City. Unlike Del Norte County which has a larger percentage of males than females, Crescent City shows a higher percentage of females (51.3 percent) than males (48.7 percent). Among those residents under 19 years, old there is a significantly greater number of males (38 percent of male total) than females (29.6 percent). The number of females to males begins to between the ages 20 to 64 with males at 51.5 percent and females at 53.8 percent. When the population age exceeds 64 years old, there is a large shift back to females. Females 65 and over represent 16.6 percent of the female total while males 65 and older represent only 10.3 percent of the male total.



TABLE 2 - 10

GENDER DISTRIBUTION BY AGE GROUP
City of Crescent City
1990

Age Group	Male		Female		Total	
	Number	% of Total	Number	% of Total	Number	% of Total
0 to 4	218	10.2%	176	7.8%	394	9.0%
5 to 9	176	8.3%	209	9.3%	385	8.8%
10 to 14	227	10.6%	148	6.6%	375	8.6%
15 to 19	190	8.9%	133	5.9%	323	7.4%
Subtotal 0 to 19	811	38.0%	666	29.6%	1,477	33.8%
20 to 24	128	6.0%	139	6.2%	267	6.1%
25 to 29	122	5.7%	187	8.3%	309	7.1%
30 to 34	197	9.2%	190	8.5%	387	8.8%
35 to 39	178	8.3%	180	8.0%	358	8.2%
40 to 44	157	7.4%	159	7.1%	316	7.2%
45 to 49	131	6.1%	105	4.7%	236	5.4%
50 to 54	50	2.3%	91	4.0%	141	3.2%
55 to 59	54	2.5%	70	3.1%	124	2.8%
60 to 64	85	4.0%	88	3.9%	173	3.9%
Subtotal 20-64	1,102	51.5%	1,209	53.8%	2,311	52.7
65 to 69	79	3.7%	107	4.8%	186	4.2%
70 to 74	64	3.0%	93	4.1%	157	3.6%
75 to 79	46	2.2%	62	2.8%	108	2.5%
80 to 84	12	0.6%	36	1.6%	48	1.1%
85 and over	18	0.8%	75	3.3%	93	2.1%
Subtotal 65 and up	219	10.3%	373	16.6%	592	13.5%
TOTAL	2,132	100.0%	2,248	100.0%	4,380	100.0%
Percentage of Total	48.7%		51.3%		100.0%	

Source: U.S. Census Bureau, 1990.



HOUSEHOLD AND FAMILY COMPOSITION

While population grew sharply in 1992 due to the opening of Pelican Bay State Prison, households showed relatively minor growth rates. Residential housing units remained steady as single family homes increased by 95 units, multi-family housing increased by 173 units, and mobilehomes increased by 56 units. Over the last twelve years, the average persons per household was 2.5. These results are shown in Table 2-11.

TABLE 2-11
HOUSEHOLD CHARACTERISTICS
City of Crescent City
1985-1997

Date	Population			Household					Persons per Household
	Total	Households	Group Quarters	Single Family	Multi-Family	Mobile Homes	Total	Vacancy	
1985	3,772	3,623	149	874	601	104	1,579	6.65%	2.458
1986	3,921	3,770	151	888	601	113	1,602	5.74%	2.497
1987	4,079	3,914	165	901	602	123	1,626	5.72%	2.553
1988	4,203	4,019	184	910	597	132	1,639	5.98%	2.608
1989	4,176	4,012	164	922	636	143	1,701	6.82%	2.531
1990	4,259	4,079	180	942	676	156	1,774	7.22%	2.478
1991	4,543	4,358	185	949	676	158	1,783	7.18%	2.633
1992	8,006	4,339	3,667	967	716	159	1,842	7.55%	2.548
1993	8,348	4,326	4,022	967	716	159	1,842	7.55%	2.540
1994	8,543	4,350	4,193	965	718	160	1,843	7.54%	2.553
1995	8,163	4,384	3,779	967	738	160	1,865	7.51%	2.541
1996	8,105	4,442	3,663	969	774	160	1,903	7.51%	2.524
1997	8,334	4,468	3,866	969	774	160	1,903	7.51%	2.539

Source: California Department of Finance, Population and Housing Data, 1985-1997.

According to the 1990 U.S. Census, Crescent City had a disproportionately large number of female-headed single-family households. Nearly 15 percent of all households in Crescent City were female-headed families as compared to 8.1 percent in the county and 6.4 percent for the state. This most likely reflects the high percentage of families on government assistance in Crescent City. Household composition breakdowns are presented in Table 2-12.



TABLE 2 - 12
HOUSEHOLD COMPOSITION
City of Crescent City, Del Norte County, and California
1990

Family Type	City of Crescent City		Del Norte County		California	
	No. of Households	Percent	No. of Households	Percent	No. of Households	Percent
Married-Couple Family w/children	384	23.5%	2,059	25.6%	2,752,645	26.5%
Married-Couple Family w/o children	380	23.3%	2,567	32.0%	2,850,982	27.4%
Male Householder w/children	24	1.5%	159	2.0%	200,612	1.9%
Male Householder w/o children	11	0.7%	111	1.4%	252,964	2.4%
Female Householder w/children	243	14.9%	649	8.1%	661,698	6.4%
Female Householder w/o children	68	4.2%	262	3.3%	499,976	4.8%
Non-Family Household	524	32.1%	2,224	27.7%	3,180,823	30.6%
TOTAL	1,634	100.0%	8,031	100.0%	10,399,700	100.0%
Source: U.S. Census Bureau, 1990.						

PLACE OF RESIDENCE

Table 2-13 shows the residential mobility of Crescent City's population compared to that of Del Norte County and California. The changes in residence are recorded from 1985 to 1990, counting the number of residents aged five and over. Crescent City showed an insignificant amount of in-migration from other countries with only 0.9 percent between 1985 and 1990. The most significant category is the number of people coming from another county in California. Crescent City showed that 24.4 percent of its population and 27.5 percent of Del Norte County's population moved from another county, while only 11.8 percent in the state moved from county to county. This reflects the high number of retirees and other residents that are leaving the large cities for Del Norte County's small town lifestyle and natural resource amenities.



TABLE 2-13
RESIDENTIAL PATTERNS
City of Crescent City, Del Norte County, and California
1985 to 1990

Place of Residence in 1985	Crescent City		Del Norte County		California	
	Total	% of Total	Total	% of Total	Total	% of Total
Same House	1,684	42.2%	8,803	40.6%	12,146,574	44.4%
Different House in Same County	980	24.6%	4,558	21.0%	8,525,870	31.1%
Different County in California	974	24.4%	5,963	27.5%	3,237,662	11.8%
Different State	311	7.8%	2,070	9.5%	1,974,833	7.2%
Different Country	37	0.9%	309	1.4%	1,498,608	5.5%
Total	3,986	100.0%	21,703	100.0%	27,383,547	100.0%

Source: U.S. Census Bureau, 1990.



2.4 FINDINGS

- General planning in Crescent City started in 1962 with the General Plan for Crescent City and its surrounding area. This was the City's first effort to develop a coordinated plan for the physical development of the city.
- Numerous government agencies have permitting or review authority over activities in and around Crescent City.
- The city experienced the most dramatic population increase in its history with the annexation of the Pelican Bay State Prison in 1992. The city's population went from 4,350 to 8,000, a 3,650 person increase (45.6 percent).
- With the annexation of Pelican Bay State Prison in 1992, the ethnic distribution of the city's residents became more diverse.
- Excluding the prison population, Crescent City has a larger population of males than females.
- Crescent City has a larger population of residents less than 17 years old and 65 years and older than both Del Norte County and the California.
- Crescent City showed a high percentage of people moving into Crescent City from another county in California

2.5 PERSONS CONSULTED

Casey, Steve, City Manager, City of Crescent City

McBrayer, Stephanie, Assistant Planner, City of Crescent City

Mathews, Kathy, Transportation Coordinator, Local Transportation Commission

2.6 BIBLIOGRAPHY

Crescent City, City of. *Zoning Ordinance*, May 1997.

_____. *Local Coastal Program*. 1979.

_____. *Downtown Revitalization Plan*. 1997.

Crescent City, City of and Del Norte County. *Housing Element*. 1992-1997.

Crescent City Harbor District and Del Norte County. *Crescent City Harbor Port Land Use Plan*. October 1986.



Del Norte County. *Del Norte County General Plan*. Crescent City, CA. 1976.

_____. *Del Norte County Local Coastal Program Land Use Plan*. Crescent City, CA.
Del Norte County. 1984.

Del Norte Economic Development Corporation. *Crescent City Harbor Waterfront Development Plan*.
March 1996.

Pelican Bay State Prison Community Resources Division, *Ethnicity of Pelican Bay Employees and Inmates*.
May 17, 1996.

U.S. Census Bureau, *U.S. Census of Population and Housing*, Summary Tape files, Crescent City, 1990.

_____. *U.S. Census of Population and Housing*, Summary Tape files, California, 1990.

_____. *U.S. Census of Population and Housing*, Summary Tape files, Del Norte County, 1990.





CHAPTER 3: TRANSPORTATION

CHAPTER 3

TRANSPORTATION AND CIRCULATION

3.1 INTRODUCTION

This chapter describes the transportation system of Crescent City, including the street and highway system, bicycles facilities, and transit services. Emphasis is placed on facilities that are needed to support other elements of the General Plan and facilities that may be directed or affected by General Plan policies.

The information in this Background Report is derived from a number of sources, including the existing *Crescent City General Plan*, the *Del Norte County Regional Transportation Plan* prepared by the Del Norte Local Transportation Commission, Caltrans traffic data, and a number of traffic studies conducted for specific development projects in the city.

3.2 STREET AND HIGHWAY SYSTEM

Crescent City's street and highway system is composed of a hierarchy of roadways, including the major through highway, U.S. 101, and various arterial, collector and local streets. The hierarchy, usually referred to as a "functional classification," is laid out in the City's adopted General Plan. However, that plan, adopted in 1976 as a blueprint to reach 1995, is considered obsolete due to the inclusion of a freeway bypass for U.S. 101 and at least one street extension (Pacific Avenue) that has never been implemented. Figure 3-1 shows the functional classification proposed in 1976.

A review of the existing circulation system reveals that, while there is much that remains valid from the existing plan, a number of changes have occurred, including a larger expansion of the urban area than was anticipated in the old plan. Figure 3-2 shows the existing system. It includes four functional classes: a freeway, arterial streets, collector streets, and local streets. The following is a description of how these facility types differ which provides policymakers with information regarding such characteristics as traffic volume, speed, and noise.

The classification system has two primary functions in a general plan. Firstly, it identifies those streets that are intended to carry moderate to high volumes of traffic, and thus differentiates them from the more local, largely residential, streets that make up the majority of streets in any community. Secondly, the functional classification serves as a guide to locations that need improvements or expansions at such time when significant traffic congestion occurs in a community. In Crescent City, this latter function is for the most part hypothetical as, except for select periods during the peak summer months, the city's circulation system does not have the types of demands placed on it that would appear to lead to the need for major system expansion.



ROADWAY NETWORK

Freeways

Freeways are facilities that exclusively have a traffic-carrying role. No access is provided to freeways except at designated interchanges. Freeways are designed to be high speed, high capacity facilities intended to move as many as 20,000 cars per lane per day. Currently, the only freeway in Del Norte County is the portion of U.S. 101 north of Parkway Drive.

Arterials

Arterial streets are intended to serve moderate levels of through traffic, but they tend to provide some access to adjacent land uses as well. Particularly in the central portion of Crescent City on U.S. 101, the provision of access to the adjacent land is quite important. Arterial streets will typically have four to six lanes (total) for through traffic, and if the right-of-way permits, a separate median lane for left turn movements. Usually, median lanes are landscaped so that turns can only be made at intersections. However, the median may be striped to allow turns into and from driveways to be made from the median. Ideally, arterial streets will be designed to concentrate access points through the provision of common driveways or possibly by locating driveways on a cross-street where the opportunity exists. Arterial streets are usually designed so that the only interruption to through-traffic flow is due to the presence of traffic signals at key crossing locations.

Within the Crescent City limits, U.S. 101 and Northcrest Drive function as arterial streets. Front Street is designed as an arterial street with four lanes plus a left-turn median lane; however, it does not carry the traffic volume typically associated with an arterial; it is shown as an arterial on Figure 3-2.

U.S. 101 has several cross-sections as it passes through the city. South of Anchor Way, it is a two-lane State Highway. From Anchor Way to just south of Elk Valley Road, a central two-way left turn median was added. Between a point south of Elk Valley Road and Front Street, U.S. 101 has two lanes in each direction plus the left-turn median. The highway becomes a one-way couplet between Front Street and 9th Street, with three lanes northbound on M Street and two lanes southbound on L Street. From there, the highway reverts to two through lanes in each direction plus the left turn median to Parkway Drive, where it becomes a freeway. Part of U.S. 101 between Northcrest Drive and 9th Street contains a third southbound lane; this converts to a right-turn lane at 9th Street.

Northcrest Drive includes two lanes in each direction plus a left-turn median lane throughout its length within the city limits. North of Old Mill Road in the unincorporated area, it reverts to a two-lane facility with a left-turn median in some locations.

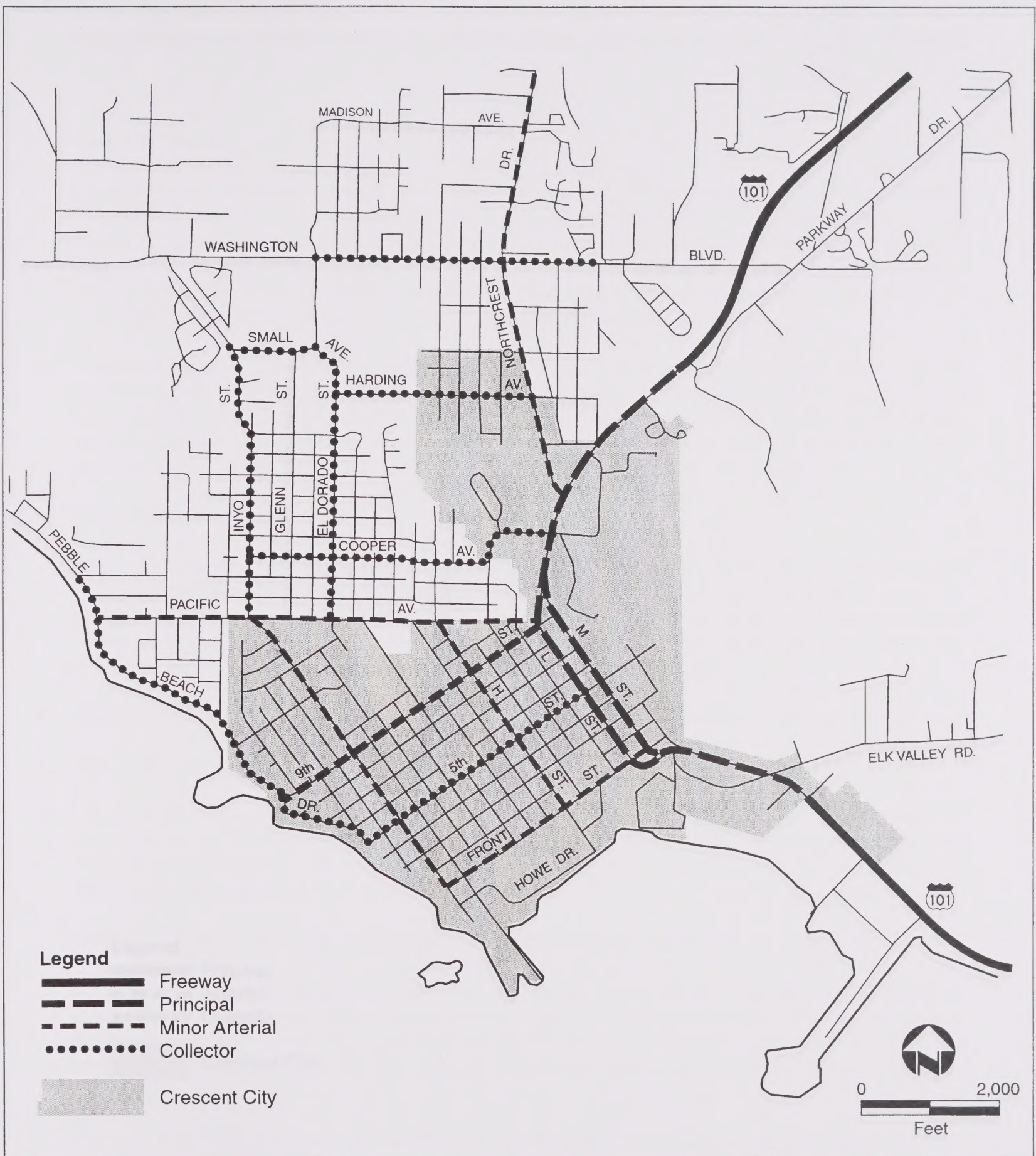


Figure 3-1
Crescent City - 1976 General Plan
Functional Classification System



Figure 3-2
Crescent City - Existing Functional
Classification System (1997)



Collector Streets

Collector streets connect the local street network with the arterial network, and they also provide access to adjoining properties. There is generally little driveway control imposed or needed on collectors. They are differentiated from arterials also in that there may be periodic four-way stop controls along their length. They differ from local streets in that most local streets are controlled by two-way stop signs at their intersection with collectors. Collector streets typically have one lane in each direction. In some isolated cases, left turn lanes may be created at key intersections with arterial streets.

Within the Crescent City limits, the following streets function as collectors: Pebble Beach Drive, A Street, H Street, Battery Street, Howe Drive, a short section of Elk Valley Road, 5th Street, and 9th Street. Within Crescent City's unincorporated urban area, the following function as collector streets: Old Mill Road, Madison Avenue, Washington Boulevard west of Inyo Street, Small Avenue, Harding Avenue, Cooper Avenue, Pacific Avenue, Inyo Street, Glenn Street, El Dorado Street, and Meridian Street.

Local Streets

Local streets have the principal function to provide access to adjoining property. They are intended to be low volume and low speed facilities. Typically, they have one lane in each direction. In urban areas, the streets are generally wide enough to allow parking on both sides of the street. Local streets are usually controlled by stop signs at their intersections with arterials and collectors. Stop and/or yield control may also be present at the intersection of two local streets if conditions warrant.

All streets in the area not designated as freeway, arterial or collectors are defined as local streets.

TRAFFIC CONTROLS

Crescent City has seven traffic signals within the city limits at: U.S. 101/Elk Valley Road, L Street/5th Street, M Street/5th Street, L Street/9th Street, U.S. 101/Cooper Avenue, U.S. 101/Northcrest Drive, and Northcrest Drive/Harding Avenue. There is one signal in the unincorporated part of the urban area at Washington Boulevard and Northcrest Drive.

VOLUMES AND SERVICE LEVELS ON CRESCENT CITY STREETS

Because there is relatively little street congestion in Crescent City (at least by the usual standards for urban areas), there is not much available data documenting traffic volumes on the local circulation street system. Traffic volume data is typically collected only when a problem is identified or when a new land use development is proposed that may lead to traffic congestion. Data is available from Caltrans (see Table 3-1) for U.S. 101.

Table 3-1 also includes an estimate of "Service Level" for each of the segments of SR 101. "Service Level" is a measure of the quality of traffic flow developed by the traffic engineering profession that relates volume and capacity to a "score card" evaluation of how well the facility is operating. There are six service levels, grades A through F, A being the best. In larger urban areas, Level of Service D is used most frequently as a standard; in smaller areas, Level C is sometimes preferred. The choice of service level standard is always a compromise between what is desired and what can be afforded.



Table 3-1 documents estimates of volumes and Service Levels for the various segments of U.S. 101 for “average” conditions based on Caltrans Average Annual Daily Traffic (AADT) estimates. Caltrans estimates that the peak month of traffic on this portion of U.S. 101 is approximately 30 percent higher than the average. This is an unusually high peak month percentage and is reflective of the summer vacation peak in Del Norte County. Service Level computations for the peak month would push some of the segments of U.S. 101 to Level C.

TABLE 3-1
SERVICE LEVELS ON U.S. 101 IN CRESCENT CITY
City of Crescent City
1996

Location	Volume Per Day	Capacity	Volume/ Capacity Ratio	Service Level
U.S. 101 - Sand Mine Road to Crescent City Limits	5,500	23,000	0.24	A
U.S. 101 - Crescent City Limits to Elk Valley Road	9,100	17,000	0.54	B
U.S. 101 - Elk Valley Road to Front Street	16,600	35,800	0.46	B
U.S. 101 - Front Street to 4 th Street	13,900	44,700	0.39	B
U.S. 101 - 4 th Street to 9 th Street	22,400	44,700	0.50	B
U.S. 101 - 9 th Street to Northcrest Drive	21,700	44,700	0.49	B
U.S. 101 - Northcrest Drive to Parkway Drive	26,500	35,800	0.74	B
U.S. 101 - Parkway Drive to Washington Blvd	11,000	80,000	0.14	A
U.S. 101 - Washington Blvd to U.S. 199	9,400	80,000	0.12	A

Source: Caltrans, 1997; Dowling Associates, 1997.

Service Level can also be measured at individual intersections. This measurement requires the collection of peak hour turning movement data. In Crescent City, the only recent turning movement counts were made by the Fehr and Peers firm in conjunction with a proposed County Social Services Building to be located along Northcrest Drive. Using data collected in 1996, traffic consultants Fehr and Peers determined that the intersection of U.S. 101/Northcrest is currently operating at Service Level C in the AM peak hour and Service Level B in the PM peak hour.



Because volume data does not exist for the remainder of the City, it is not possible to quantify Service Level throughout the rest of Crescent City. However, based on the observation the General Plan traffic consultants indicated that overall, traffic service in the remainder of Crescent City is excellent.

STREET AND HIGHWAY SYSTEM ISSUES

As noted above, there are no significant operations problems on the existing Crescent City circulation system. However, there is one location that has an institutional problem that may eventually involve Crescent City. The interchange of Washington Boulevard and U.S. 101 is incomplete. It was left in that stage at the end of construction of the northern portion of the freeway because an alignment had not been selected for a bypass of Crescent City.

On the assumption that the bypass would not be constructed within the foreseeable future, Del Norte County has developed a plan for upgrading the interchange. Caltrans has prepared a "Project Study Report" (PSR) according to Caltrans specifications and has selected an alternative design for an improved project. The County has also established a mitigation fee program and has been collecting that fee from new development in the area, all fees to be devoted to the improved interchange. As funds are collected to a point where phases of the project can be implemented, the County is doing so. The County has already revised a portion of the Washington Boulevard/Parkway Drive intersection under this program.

This issue becomes significant to Crescent City only if the interchanges are to be annexed by the City. If such an annexation were to take place, the City would also inherit the project and the mitigation program. It would also likely become involved in ongoing efforts to find other funding sources to allow the entire project to be implemented.

3.3 PUBLIC TRANSPORTATION

The City of Crescent City and Del Norte County provide fixed route public transit services on a cooperative basis. Their system, known as the Redwood Coast Transit, provides both dial-a-ride service and bus service to the Klamath area. The Redwood Coast Transit Service provides a demand responsive dial-a-ride service to the greater Crescent City area from 7 a.m. to 6 p.m. during the business week. The Klamath Public Bus Service provides fixed route service between Crescent City and Klamath twice per day, six days a week. Table 3-2 details the Redwood Coast Transit Services.

The *Comprehensive Public Transit Service Plan*, prepared by the Del Norte County Local Transportation Commission examines demand for public ridership, lists several service alternatives, establishes goals and objectives for public ridership, identifies possible operation improvements, and provides the details for a marketing plan, a capital plan, and a financial plan.

According to the Plan, the major issue facing public transportation is funding. Throughout California, public transportation services do not generate sufficient revenue from the farebox to pay for their operating costs. Supplementary funding for transit is available from a number of State programs, most specifically the State Transportation Fund, which earmarks a certain amount of gas tax funds for public transportation. The ability to retain or expand transit services is directly dependent on the level of supplementary funding



available. At this time, the City and County spent all funds available from these sources to provide existing public transportation.

TABLE 3-2
REDWOOD COAST TRANSIT SERVICES
City of Crescent City
1995

	Redwood Coast Transit Redwood Dial-a-Ride	Redwood Coast Transit Klamath Public Bus
Type of Service	Demand Response	Fixed Route Commuter
Ridership	General Public	General Public
Service Area	Greater Crescent City	Crescent City to Klamath
Service Hours	Mon.-Fri. (7am-6pm)	Mon.-Sat. (6am-10am) (2pm-6pm)
One-Way Trips/Month	5,300	575
Restrictions	No Restrictions	No Restrictions
Route Frequency	On Request	2 trips per day
Fares	Adults - \$1.25 Juniors - \$1.00 Seniors/Disabled - \$.75	Adults - \$1.25 Juniors - \$1.00 Seniors/Disabled - \$.75
Capacity Constraints	Some capacity problems during peak hours/low Ridership off-peak	Meets current demand
Source: Del Norte County Local Transportation Commission, 1995.		

Non-Profit Transportation

Special transportation needs for the elderly and handicapped are met by two non-profit agencies. United Indian Health Services is a private, non-profit transportation provider that operates fixed routes as well as demand responsive service. Currently (December 1997), Indian Health Service is unable to meet the tremendous demand for this transportation service. The other provider is the consolidated Transportation Service Agency. The Agency provides free transportation services for elderly individuals and those with development needs. This includes free transportation of the elderly to the Del Norte Senior Center and fee based transport for non-medical emergencies outside the county.

Private Transportation Services

Private bus service is provided by Western Greyhound Lines with service to and from Crescent City north and south on U.S. 101. Greenbelt Stage (Amtravel) Lines, which provided AMTRAK connector service from Crescent City south to Eureka/Arcata, was discontinued due to lack of sufficient ridership.



Del Norte Taxi Service is the only taxi service in Crescent City. The privately owned service has five passenger cars that provide door-to-door service 24 hours a day. Quick and convenient service is provided to anywhere in the county. Previously this service was subsidized by Crescent City and Del Norte County, but the subsidy was eliminated in 1994.

3.4 NON-MOTORIZED TRANSPORTATION

The City of Crescent City established a bike route system within the city limits. This bike route utilizes lightly used residential streets, other street sections with separate bike lanes and sections of bike paths. For the Crescent City urban areas, bicycles are becoming a more popular transportation mode for more age groups. However, the year-round climate for Crescent City has not encouraged the large demand for bicycle facilities as has been experienced in other communities in California.

Bicycle routes are categorized by the degree to which they separate bicycle movement from traffic flow. The following are categories of bike lanes established by the California Bikeways Act :

- *Class I Bikeways*: provide a completely separated right-of-way designated for the exclusive use of bicycles and pedestrians with crossflows by motorists minimized. These bikeways are typically referred to as a “bike path” or “bike trail.” Due to the extra cost and lack of space for these facilities, public support for these facilities must be significant before additional facilities are built.
- *Class II Bikeways*: provide a restricted right-of-way designated for the exclusive or semi-exclusive use of bicycles with through travel by motor vehicles or pedestrians prohibited, but with vehicular parking and crossflows by pedestrians and motorists permitted. This bikeway is commonly called a “bike lane” and are provided adjacent to existing roadways.
- *Class III Bikeways*: Class III bikeways, which provide a right-of -way designated by signs or permanent markings and shared with pedestrians or motorists. This shared roadway is called a “bike route.” Due to the street widths in Crescent City, Class III bikeways will be the primary type of biking facility.

The *Del Norte County and Crescent City Bicycle Facilities Plan* identifies a system of bikeway routes in the city and county. The Plan, which was originally adopted in 1987 and periodically updated, designates bikeway routes in the greater Crescent City area. Table 3-3 identifies these routes.



TABLE 3-3
BIKE ROUTES IN GREATER CRESCENT CITY AREA
City of Crescent City
1996

NAME	LOCATION
El Dorado Street	from Hamilton Avenue to Harding Avenue
H Street	from Pacific Avenue to Howe Drive
Harding Avenue	from El Dorado Street to Northcrest Drive
Hamilton Avenue	from El Dorado Street to Inyo Street
Fresno Street	from Hamilton Avenue to Pacific Avenue
Howe Drive Bike Path	from Howe Drive to Citizens Dock
Inyo Street	from Washington Blvd. To Pacific Avenue
Northcrest Drive	from Route 101 to Standard Veneer Road
Pacific Avenue	from Pebble Beach Drive to H Street
Pebble Beach Drive	from Point Saint George to Ninth Street
Hobbs Wall Trail	from Elk Valley Road to Parkway Drive
Washington Boulevard	from Parkway Drive to Pebble Beach
Ninth Street	from Pebble Beach Drive to Route 101
Source: Del Norte County Local Transportation Commission, 1996	

3.5 AVIATION

The Jack McNamara Airfield is the principal airport for Del Norte County. Due to the lack of railroads in the county, this airport serves as an important transportation route for business persons and tourists from outside the immediate region.

Located in the northwest part of Crescent City, the airfield has a 5,000 foot by 150 foot runway that can accommodate general aviation operations including commercial commuter service, business jets, large twin engine prop, light twin engine prop, and single engine aircraft. Commuter airline services, such as United Express, provide flights to and from Eureka/Arcata airport with connections to major cities.



3.6 MARITIME

Crescent City Harbor, which falls under the jurisdiction of the Crescent City Harbor District, is one of two major ports between San Francisco and the Oregon border and serves a 13,000 square mile area. It is the only harbor in Del Norte County capable of handling ocean-going vessels. The nearest deep water harbors are in Humboldt Bay, California (64 nautical miles south) and Coos Bay, Oregon (125 nautical miles north).

The Crescent City Harbor, located on the south west side of Crescent City, has many uses but is primarily used by recreational fisherman and commercial fisherman. The Harbor is occupied by approximately 300 commercial fishing vessels in the inner boat basin, 500 small craft vessels on the outer boat basin, and 1,000 sport fishing boats. The harbor is protected by a 4,700 outer breakwater, 1,200 inner breakwater, and 2,400 foot sand barrier. The harbor also has a dry dock and haul out facility.

Due to its remote location and relatively poor access, the Harbor can serve as important transportation route for bringing in major cargo in times of disaster and providing emergency services (e.g. U.S. Coast Guard services).

3.7 RAILROADS

Currently, there are no railroads in Del Norte County. The nearest rail facilities are located 75 miles away in Arcata, California and 85 miles to the north at Grants Pass, Oregon. Future development of a rail line is impeded by physical geography of Del Norte County. Rough terrain, varying elevations, and the meandering Smith River make construction of rail facilities in the north difficult. In the south portion of the county, steep topography and the Klamath River limit a rail line expansion to Arcata.

The first and only railroad built in Del Norte County was constructed in the late 1880s and provided access for both passenger and logging trains from Crescent City to the Smith River. In the early 1900s, several lumber companies anticipated expansion of the railroad to a major rail line that would connect Del Norte County to the rest of the United States. Although there were a number of plans for expansion, several of these companies closed down before the plans were ever implemented.

3.8 TELE-TRANSPORTATION

Tele-transportation represents a new form of communication that has the potential to be particularly valuable in relatively isolated areas of California such as Crescent City. The concept involves substituting various alternative means of communications for direct personal contact. It has the potential to allow work to be completed in remote locations, reducing the need for physical commuting. It also has the potential to allow new forms of activities to become physically and financially feasible without the need for added travel. A secondary benefit of the concept is that tele-transportation has the potential to make a slight reduction in the demand for new or expanded highway facilities, thus possibly delaying the need for public investments in roadways in an era when funding for such projects is becoming ever more scarce.

Tele-transportation involves the use of parallel communications forms, each of which can serve unique niches. Video-conferencing is a concept whereby a combination of television monitors, receivers and



communications lines can allow meetings to occur whereby all participants can see as well as hear each other. For example, it can allow specialized services like surgery to be practiced with the support of specialists not present in the operating room. It can allow local representatives to take an active role in the workings of the State governmental process in Sacramento without making the costly and arduous trip to the State Capital. Additionally, there are a myriad of similar possibilities.

Other components of tele-transportation includes Local Area Networks, Wide Area Networks, and other global communications elements such as the Internet and for information transfer as well as business and personal communications. The DNC Tele-Transportation Study itemizes these benefits of tele-transportation:

- Saves money;
- Increases employee productivity, efficiency, and effectiveness;
- Boosts the competitiveness of businesses;
- Creates jobs through the development of new businesses using modern communications;
- Increases accessibility to offices, businesses and personnel outside the region;
- Improves access to information and research materials; and
- Provides access to computer conferences and on-line communities.

The reason that Crescent City has yet to fully benefit from all of this new technology at the same pace as other parts of California is largely economic. There are some significant costs involved in implementing and operating the communications elements required to make tele-transportation a reality in Crescent City and the rest of the county. Other parts of California are more dense and closer to the center of this kind of activity and individual companies and agencies are larger. Thus, the total and per-unit costs are lower in the more urban portions of the state. Individual companies and agencies in urban California are thus more able to afford the costs and thus more successful in realizing the benefits. The tele-transportation study thus focuses on a number of public-private strategies whereby several Del Norte County entities, working cooperatively, can bring the needed technology into the county. This allows county residents, businesses, and governmental agencies to participate in this technological revolution and gain the same benefits as the rest of California.

The tele-transportation study contains in-depth evaluations of technological options, a policy element, an action element, a discussion of financial elements for various tele-transportation options, and recommendations for implementation. As of January 1998, work was continuing on implementing an Integrated Services Digital Network (ISDN) communications line to a consortium known as the "Tech Center" in Crescent City. By March 1998, the Tech Center will have a tele-transportation multimedia conference center available for public use. This will permit Internet video conferencing for business, training or other use.

In addition to the new service described above, the tele-transportation study reported that, as of the end of 1996, Crescent City had one local and one regional Internet Service Provider (ISP), which allows for connection to the Internet, albeit at the rather slow speed of 28.8 Kbs. This speed is considered adequate for "hobby-like" access to the Internet, and for some types of research, such as making use of university libraries world-wide. However, this speed is not sufficient for the more advanced forms of tele-commuting proposed in the study. A major issue regarding the connection cost to the Internet is the cost of connecting



between the individual, firm, or agency and the location of the Internet connection itself. In some areas, this connection can be made at the cost of a local phone call. In Crescent City, only the 28.8 speed is available at the cost of a local call. Some of the larger nation-wide ISPs, such as Netcom, have higher-speed access available through a specially priced long distance number, (Netcom offers 56 Kbs access at a rate of \$4.90 per hour as of February, 1998). Overtime, it is likely that costs will continue to decrease and the technology will become as available as the ubiquitous telephone and television are today.



3.9 FINDINGS

- U.S. 101 is the principal arterial street passing through Crescent City. Evaluation of operating conditions on this facility indicate it is operating at an acceptable level of service.
- The interchange of Washington Boulevard and U.S. 101 is deficient and a program is underway to fund the improvement. This interchange is located in unincorporated Del Norte County, but it could become an issue for City concern depending on eventual annexation policies.
- Overall, the city's circulation system does an excellent job of serving the demands placed upon it.
- Funding for public transit is limited since most transit services do not generate sufficient revenue from the farebox.
- Currently (December 1997), there are no railroad facilities in the Crescent City area due primarily to physical impediments such as steep topography and meandering rivers.
- Tele-transportation represents a new form of communication that has the potential to be particularly valuable in relatively isolated areas of California such as Crescent City. Tele-transportation has the potential to make a slight reduction in the demand for new or expanded highway facilities, thus possibly delaying the need for public investments in roadways in an era when funding for such projects is becoming ever more scarce.

3.10 PERSONS CONSULTED

Mathews, Kathryn, Transportation Coordinator, Del Norte County Local Transportation Commission

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3.11 BIBLIOGRAPHY

Caltrans Web Page. *1996 Traffic Volumes on U.S. 101*. 1996.

Carranco, Lynwood and John T. Labbe. *Logging and the Redwoods*. 1989.

Crescent City, City of City of and Del Norte County. *Del Norte County and Crescent City Bicycle Facilities Plan*. 1996.

Del Norte County. *Del Norte County General Plan* - used for Crescent City proposed circulation element. 1977.

_____. *Project Study Report on Route 101 in Del Norte County, near Crescent City*. May, 1994.



Del Norte Economic Development Corporation. *Crescent City Waterfront Development Plan*. March 1996.

Del Norte County Local Transportation Commission. *Del Norte County Regional Transportation Plan*. 1994..

_____. *Redwood Coast Transit Comprehensive Public Transit Service Plan*. June 1995.

_____. *Tele-Transportation Study & Mode Elements*. February 13, 1997.

Fehr & Peers Associates, Inc. *Del Norte County Social Services Building Traffic Study*. August 28, 1996.





CHAPTER 4: PUBLIC FACILITIES AND SERVICES

CHAPTER 4

PUBLIC FACILITIES AND SERVICES

4.1 INTRODUCTION

Development within the City of Crescent City is dependent on an elaborate network of public facilities and services. Each type of services has a unique set of constraints and must adapt to growth and change differently. This chapter focuses Crescent City's public facilities and services and includes the following categories:

- water supply and delivery system;
- wastewater system;
- solid waste disposal;
- storm drainage and flood protection;
- school facilities;
- law enforcement;
- fire protection; and
- communications.

Other public facilities and services not discussed in this chapter include transportation facilities (Chapter 3) and parks and recreational facilities (Chapter 1).

URBAN SERVICE BOUNDARY

Within the Crescent City Planning Area, the County has an adopted urban service boundary that encompasses all land considered for future water and sewer service expansion and thus for future urban development and annexation (see Figure 2 in the Introduction). Since it is costly to provide infrastructure in low density areas such as rural communities, extension of water and sewer service is generally prohibited outside this boundary by both jurisdictions. Since development within this boundary is subject to higher densities and intensities, the City and County can provide long-term service planning within this area. As the city grows and annexes unincorporated land, the City will direct growth to areas inside the urban service boundary so that all incorporated areas have urban services.

4.2 WATER SUPPLY AND DELIVERY

BACKGROUND

The City of Crescent City operates the water supply and distribution system serving the city and portions of the greater Crescent City area. Figure 4-1 shows the City's current Water Service Area. Crescent City originally purchased the water system from a private water company called the Crescent City Water Company. Prior to purchase of the water system, the water company provided service to the City and the unincorporated areas surrounding the city. After the purchase, the City installed a cement-lined, cast-iron pipe in 1958 to transport water from the Ranney Well on the Smith River to the City's distribution system. The City also continued to provide service to existing customers outside the city limits. In the 1960s, booster pumps were added to the system. In 1963, the City built a storage and pumping facility to increase the water



supply to the downtown area of Crescent City. In the 1970s, pumps were added to the system to increase the amount of water into the city. By the 1980s, the City experienced difficulties with system pressures.

DEMAND

According to estimates in the *1992 Water Master Plan*, 70 percent of the system users are outside the city limits. However, since 19.3 percent of that usage is from the prison, total incorporated city usage is 50.7 percent. Excluding the prison from both the county and the city, the distribution would be 62.8 percent of accounts and 61.3 percent flow in the unincorporated area, and 37.2 percent of accounts and 38.7 percent flow in the city limits. Current commercial flows of both the city (18 percent) and the unincorporated areas (21 percent) are very close. Residential flows are much higher. Residential usage in the unincorporated areas is twice that of the city's residential areas.

In 1997, the water system serves 3,696 accounts per month (including Pelican Bay Prison). Water consumption is at 62,387,688 gallons per month (gpm) and 748,652,256 gallons per year (gpy). The average daily demand for the water system is 2,051,102 gallons per day (gpd). Without the Pelican Bay State Prison, the average daily demand is 1,679,667.

The water supply has started to fall behind consumer demand. Transmission lines have become increasingly inadequate in delivering water to meet peak demands. As a result, water flow can reach low pressure levels, especially during summer peak periods, causing concern for fire protection districts who rely on the water pressure to fight fires.

FACILITIES

Supply

Crescent City obtains all of its water from the Smith River via a well point type structure known and patented as a "Ranney Well." A Ranney Well is a large caisson built with feeder tubes with vertical turbine pumps located on the top of the caisson. River water flows through the natural sands and gravels on the river bottom and through the pipelines into the caisson. The pumps deliver the water from the caisson to the City's water system. The well is located on the river's bank approximately 8.5 miles north of the city limits.

The well and the transmission line were constructed in 1958. Since that time, the Smith River has continued to be an abundant and reliable source of water. Due to the high quality of the water taken from Ranney Well, the City has limited water treatment to additions of chlorine and fluoride prior to distribution.

Booster Pump Stations and Storage Facilities

There are five pump stations with 11 individual pumps within the Crescent City water system. Three pumps are located within the Ranney Well on the Smith River. A telemetry circuit signals these pumps to operate based on the water level in the elevated 50,000 gallon reservoir. The first pump operates at a depth of 10 feet in the reservoir, the second pump becomes operational when the levels in the reservoir drop to eight feet, and the third pump begins operating when the reservoir level falls to six feet in depth.

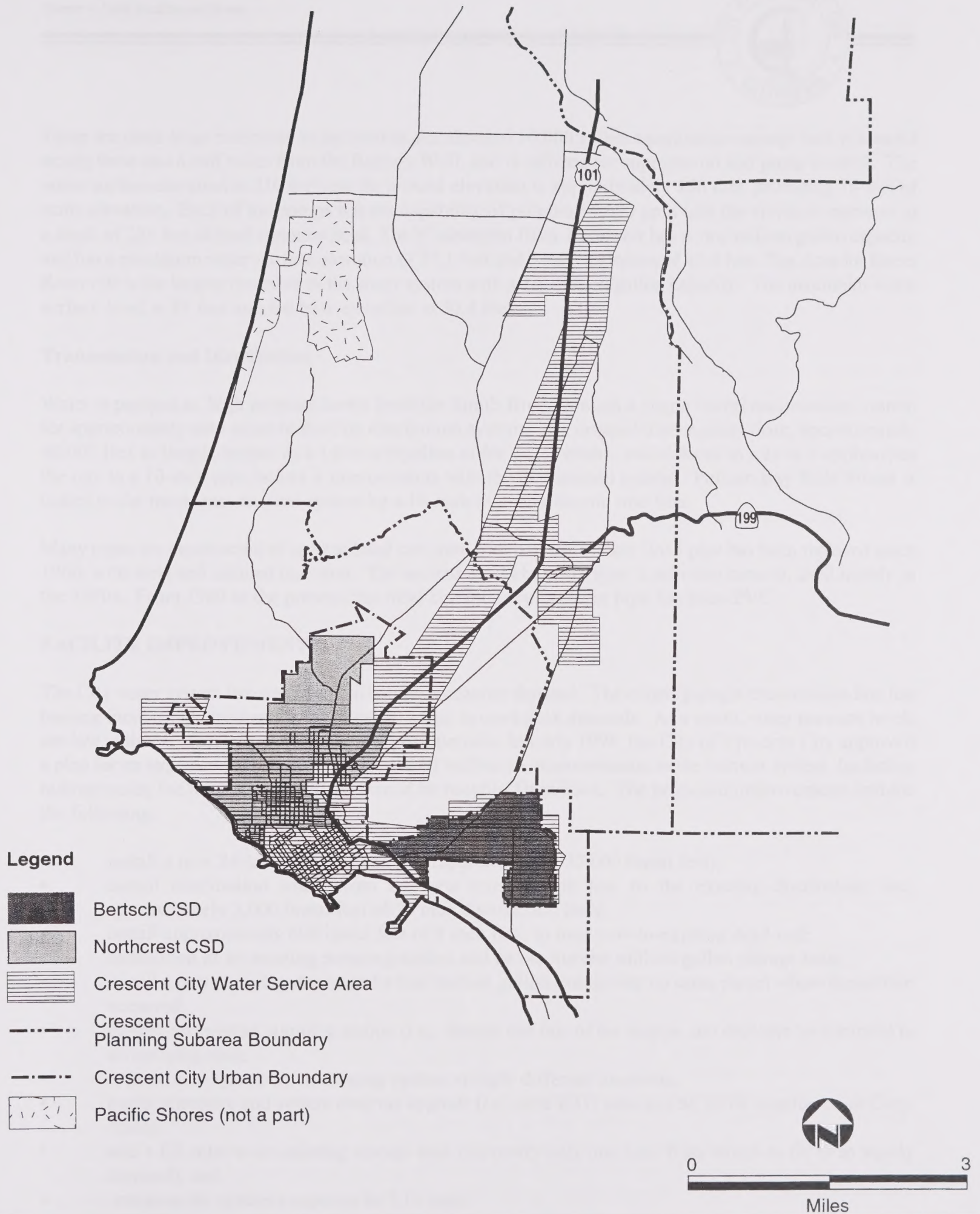


Figure 4-1
Crescent City Water Service Area, Crescent City
Urban Area, and CSD Boundaries



There are three large reservoirs in the system. An elevated 50,000 gallon equalization-storage tank is located nearly three and a half miles from the Ranney Well, and is utilized for suppression and pump control. The water surface elevation is 210 feet and the ground elevation is approximately 135 feet, providing 75 feet of static elevation. Each of the pumps has the capability of pumping 1,680 gpm into the elevated reservoir at a depth of 235 feet of total dynamic head. The Washington Blvd. Reservoir has a one million gallon capacity and has a maximum water surface elevation of 77.1 feet and a base elevation of 45.4 feet. The Amador Street Reservoir is the largest reservoir in the water system with a 1.5 million gallon capacity. The maximum water surface level is 89 feet and the base elevation is 50.4 feet.

Transmission and Distribution

Water is pumped at high pressure levels from the Smith River through a single-barrel transmission system for approximately nine miles to the City distribution system. The original transmission main, approximately 44,600 feet in length, begins as a 14-inch pipeline at the water intake, and reduces in size as it approaches the city to a 10-inch pipe before it interconnects with the distribution system. Pelican Bay State Prison is linked to the main transmission system by a 18-inch diameter ductile iron line.

Many pipes are constructed of cement lined cast iron. Much of the cement lined pipe has been replaced since 1960, with steel and unlined cast iron. The second most abundant type is asbestos cement, used mostly in the 1970s. From 1980 to the present, the most common replacement pipe has been PVC.

FACILITY IMPROVEMENTS

The City water system has started to fall behind consumer demand. The existing single transmission line has become increasingly inadequate in delivering water to meet peak demands. As a result, water pressure levels are low at times, especially during summer peak periods. In early 1998, the City of Crescent City approved a plan for an expansion project that would add \$7 million in improvements to the current system. Including indirect costs, the total cost to the City would be roughly \$9 million. The proposed improvements include the following:

- install a new 24-inch transmission line (approximately 37,000 lineal feet);
- install distribution lines, from the new transmission line to the existing distribution line, approximately 5,000 lineal feet of 16 inch distribution lines;
- install approximately 600 lineal feet of 8 inch line, to loop new-to-existing dead-end;
- demolition of an existing pumping station and an on-site one million gallon storage tank;
- install a new pumping station and a four million gallon storage site on same parcel where demolition occurred;
- modify an existing pumping station (i.e., change out one of the pumps and dedicate by controls) to an outlying area;
- intertie new system to an existing system at eight different locations;
- major telemetry and system controls upgrade (i.e., nine RTU sites and SCADA installation at Corp. Yard);
- add a fill inlet to an existing storage tank (currently only one inlet from which to fill or to supply demand); and
- increase the system's capacity to 7.13 mgd.



The capital improvement plan for the expansion project is divided into two phases: Priority 1 and Priority 2 improvements. Priority 1 will start at Highway 101 and Wonderstump at the elevated tank site, and go south into the city. Priority 2 improvements will add a 24 inch transmission main from the river to the Priority 1 starting point (Highway 101 and Wonderstump) and some distribution system improvements (i.e., looping in order to eliminate dead-ends). Construction of Priority 1 began in May 2000.

Areas Outside the Crescent City City Limits

The City of Crescent City water system provides water service for the Bertsch Ocean View Community Service District (BOV CSD) and most of the unincorporated area within the Crescent City urban boundary. There are several enclaves within the urban boundary north of Crescent City that do not receive their water from the City's water system. These enclaves, which include urban-sized lots, obtain their water from individual wells. In addition, portions of the Crescent City Planning Area within the urban boundary, such as Jack McNamara Airport, have substandard pipelines. The rest of the Crescent City subarea outside the urban boundary relies on individual on-site wells.

Bertsch Ocean View Community Services Area

The Bertsch Ocean View Community Service District (BOV CSD) serves a small outlying area just east of Crescent City. The District contracts with the City of Crescent City for its water service. The system connects to the Crescent City water system near Highway 101 and consists of a pump station (which operates at 180 gallons per minute (gpm)), 6 to 12 inch water lines, and a 750,000 gallon storage tank. There are 583 residential and commercial service accounts within the District that consume 53,885 gallons per month and 646,620 gallons per year. The average daily demand is 1,772 gallons per day.

Since the BOV CSD system is hooked onto the Crescent City Water System, improvements to the Crescent City water production facilities must be made before capacity in the BOV CSD can be improved. In other words, the current water distribution system (pipelines) must deliver adequate water volume and pressure to the BOV CSD connection point to ensure all users are adequately served.

4.3 WASTEWATER COLLECTION, TREATMENT, AND DISPOSAL

Crescent City Municipal Wastewater Treatment and Disposal Facility

The Crescent City Municipal Wastewater Treatment and Disposal Facility, located at 210 B Street and Battery Point, serves the City of Crescent City and parts of the greater Crescent City area. This facility, which serves a population of 12,000, is designated by State and Federal agencies as the Regional Waste Water Facility. The facility's original (1979) design capacity was 1.55 mgd for average dry weather flow and 3.1 mgd for wet weather flows. The current design capacity is 1.89 mgd for average dry weather flow and 4.3 mgd for peak wet weather flows. Treatment consists of screening, preaeration, primary sedimentation, rotating biological contactors, secondary sedimentation, digestion, disinfection, and dechlorination. Sludge is anaerobically digested and dewatered with a filter belt process. Treated and disinfected effluent is discharged through a short outfall into the Pacific Ocean at Battery Point Lighthouse. In 1987, Nolte & Associates conducted a facility improvement study that recommended improvements that would bring the design capacity up to 7.3 mgd. Several improvements were made by the City in 1990 that increased capacity



of the plant to roughly five to six mgd. These improvements fell short of the study's recommended design capacity due to limitations with effluent pumps.

Hydraulically, the plant is overloaded by the inflow and infiltration in the winter. In summer months, the plant is organically overloaded. Also during the summer, the physical solids handling process is at capacity and sometimes exceeds capacity, to the point where digestion time for the solids is short-circuited. Needed short-term improvements include digester modifications and polymer enhancement for solids setting, to improve biological removal and improve solids handling, so that digester residual times are increased. In addition, long-term plans for solids disposal must be considered since the landfill will close in the year 2001. Therefore, a land application program needs to be ready for implementation by 2001.

Despite the aforementioned problems and the treatment plant running at full capacity with some days exceeding the design capacity (1997), there are no current (March 1998) plans for expansion of this facility. However, long term facility improvement planning will begin within the year that will include consideration of this facility. The study will consist of a feasibility study that examines treatment capacity alternatives for the county-wide area.

Harbor Wastewater Treatment Plant

The Harbor Wastewater Treatment Plant, located at and owned by the Crescent City Harbor District, serves solely as a seafood processing wastewater facility. The treatment plant has a design capacity of approximately 800,000 gpd, and currently runs considerably below design capacity. All by-products left from processing are disposed of at Hambros and some fish carcasses are disposed of at the Crescent City Landfill. Wastewater from this plant is discharged through the same outfall into the Pacific Ocean. The outfall is shared with the Municipal Wastewater Treatment Plant.

This treatment plant has proven to be controversial due to the odors produced by the plant's fish processing. Hydrogen sulfide produced by the plant during shrimping season (April through October) creates a nuisance for recreational users within the harbor. In early 1998, the City turned over ownership of the treatment plant to the Crescent City Harbor District. The Harbor District is working with the City and County to correct the odor problems in the near future.

Outside Crescent City City Limits

A portion of the unincorporated Crescent City subarea is served by a wastewater collection system, which is owned and maintained by the County Service Area No.1 (CSA). CSA No. 1 consists of two areas — Northcrest and Bertsch Ocean View. The remainder of the Crescent City unincorporated area uses on-site sewage disposal (the predominant type of disposal in the area) - even in areas within the urban boundary. Sewers were put into the Northcrest and Bertsch-Ocean View areas because soils were not suitable for higher densities.



4.4 SOLID WASTE COLLECTION AND DISPOSAL

The City of Crescent City disposes of its solid waste at the only solid waste landfill in the county. The Crescent City Landfill is currently owned by Del Norte County. The landfill, which was constructed and operational in 1974, is located approximately three miles north of Crescent City towards the westerly end of Old Mill Road. The landfill is operated in conjunction with transfer stations in Klamath and Gasquet. The site has reached its design capacity. Table 4-1 outlines some of the general characteristics of the Crescent City Landfill.

The City of Crescent City and Del Norte County are part of a Joint Powers Authority (JPA) known as the Del Norte County Solid Waste Management Authority (DNCSWMA). The DNCSWMA has recently (1997) gained approval for a closure plan for the landfill. As of December 1997, half of the landfill was closed under a phased closure. The DNCSWMA is planning for full closure of the landfill by the year 2001. Once the landfill is closed, the DNCSWMA is not planning any expansion of the Crescent City Landfill or designating any specific areas for future landfill or incineration disposal. Instead, plans are to have a transfer station materials recovery facility operating by Fall 2001 so that solid waste may be exported out of the county. As part of the *Del Norte County Integrated Waste Management Plan*, the DNCSWMA has identified 15 potential sites (ranking of each site according to a set of 14 criteria) as alternatives to their current plans. In addition, the DNCSWMA is aggressively pursuing waste prevention, recycling, and composting within the county to prolong the existing capacity as long as possible. The DNCSWMA has adopted the policies of “Zero Waste, End Welfare for Wasting,” and “Jumpstart Jobs with Design and Discards” as a means of reducing waste disposed in the county.



TABLE 4-1
CRESCENT CITY LANDFILL
CHARACTERISTICS
Del Norte County
1997

Facility Name	Crescent City Landfill
Location	End of Hights Access Rd., Crescent City
Facility Property Owner	Del Norte County
Responsible Authority	Del Norte Solid Waste Authority
Date of Last Permit Review	Currently under review (December 1997)
Estimates of Remaining Site Life	Conservative estimates indicates final refuse contours will be reached by 2001
Average rate of daily waste receipt in Fiscal Year 1996-97	52.3 tons, 123 cubic yards
Maximum average daily tonnage	75 tons per day
Maximum peak daily tonnage	200 tons per day
Source: Del Norte Countywide Integrated Management Plan, 1997.	



4.5 STORM DRAINAGE AND FLOOD PROTECTION

BACKGROUND

Storm water runoff is collected and conveyed by a combination of surface and underground drop inlets/storm drainage pipe, that discharge into various marsh areas within the city, into Elk Creek, or the Pacific Ocean, depending on the location. Water collected in the collection and conveyance system is segregated from the sewer/treatment system.

STORM DRAINAGE DESCRIPTION BY AREA

- There are six ocean discharge points that dispose collected storm water from the extreme northwesterly areas of the city, roughly the area contained within Pacific Avenue, D Street, and the beach to the west.
- There are five Elk Creek Discharge points that dispose the collected storm water from the areas east of D Street to west of N Street.
- The areas easterly of N Street, drain naturally by surface, to marsh land that is a part of the Elk Creek drainage basin.
- The city areas south of the Ess curve and easterly of Highway 101, are collected and disposed through two marsh land drainage points previously mentioned and two Elk Creek discharge points, located south of the creek crossing, both on the westerly and easterly sides of Highway 101.
- For the city areas north of the cemetery, the storm water is collected and conveyed into the marsh adjacent to the cemetery. When the area is surcharged, overflow is conveyed through a combination of a storm drainage culverts and surface/creek drainage areas, to the Fairgrounds marsh. Previously, the marsh was a man-made ditch system that drained into Elk Creek.
- The city areas located along Highway 101 North of the Northcrest and Highway 101 intersection, collect storm water in combination with surface/storm drainage pipe, and discharge into marsh lands north of the city.



4.6 SCHOOL FACILITIES

PRIMARY AND SECONDARY EDUCATION

The Del Norte County Unified School District (DNCUSD) and the Del Norte County Office of Education provide public educational services for the Crescent City area. DNCUSD operates seven public schools (see Figure 1-3) including two high schools and one middle school. The County Office of Education provides alternative education services for the city including Alternative Education and Juvenile Hall. Both DNCUSD and the County Office of Education share the same boundaries and have the same five board members. There are three schools in the Crescent City area that provide private educational opportunities: St. Joseph's Catholic School, Four Square Christian School, and Crescent City Junior Academy.

Table 4-2 shows date of construction, size of the building and site, grade levels at each school, number of teachers, and students enrolled. The table shows that most of the schools are older. With the exception of Mary Peacock School, all of the schools were built prior to 1966. The median teacher to student ratio is 1:21. Total enrollment for Del Norte County as of January 1997 was 5,341 students. Approximately 3,900 of the total enrollment in the county is comprised of students within the greater Crescent City area.

In 1997, the DNCUSD discovered that the district lost 224 students from the previous year. If this decline continues, it could create problems for the district's budget since lower daily attendance translates into a drop in State aid. The 1997 drop in State aid was absorbed by budget reserves; however, future district reserves are uncertain which may lead to financial hardship for the district should the enrollment numbers continue to decline.

COLLEGES

Located within the greater Crescent City area, the College of the Redwoods is Del Norte County's only school providing college level courses. This facility is a branch of the main campus of the College of the Redwoods, located outside Eureka. There are 1,200 students enrolled each year and 29 permanent employees at the Del Norte Branch. Most of those attending the Del Norte Branch are older students, with an average age of approximately 36. The branch provides programs to meet general education requirements for a college degree and a vocational nursing program. The branch grants Associate of Arts degrees, Associate of Science degrees, and certificates in various vocational programs.



TABLE 4-2

**PUBLIC SCHOOLS
Crescent City Area**

School	Year Built	Square Feet	Acres	Grades	Teachers	Teacher/ Student Ratio	1997 Enrollment
Elementary Schools							
Bess Maxwell	1957	23,378	11	K-5	21	1:19	404
Joe Hamilton	1961	27,000	8	K-5	24	1:22	521
Mary Peacock	1996	--	--	K-6	18	1:21	383
Pine Grove	1951	21,560	14.5	K-6	17	1:22	372
Middle School/Junior High School							
Crescent Elk	1930	46,588	15	6-8	33	1:23	762
Crescent Elk Addition	1953	15,108	--	--	--	--	--
High Schools							
Del Norte County High School	1957	139,080	47.6	9-12	53	1:22	1182
Sunset High School	1961	10,344	10	9-12	7	1:21	144
Alternative Schools							
Paul McCarthy Alternative Education Center	--	--	--	K-12	7	1:19	135
Source: Del Norte County Unified School District, 1987 and 1997.							



4.7 LAW ENFORCEMENT

The Crescent City Police Department, located at 686 G Street, is responsible for all law enforcement within a 1.4 square mile area within the city limits. The Department is organized into five divisions: including Administration, Patrol, Investigation, Communications, and Community Relations. Department staff consist of 12 sworn officers, one civilian officer, 12 senior volunteers, 10 youth explorer scouts, and three contract dispatchers. In 1997, the department was operating under an annual budget of \$1,038,100.

Serving a population of 4,380 residents (excluding Pelican Bay State Prison Population), the Department has 2.7 officers per 1,000 residents. This ratio is slightly higher than the national average of 2.2 officers per 1,000 residents. Response times for the police average approximately two to five minutes per call due to the small geographic radius patrolmen must cover. The Department responded to 9,536 calls between 1990 and 1997, an annual average of 1,362 calls per year.

The Crescent City Police Department will respond to other agencies outside its city limits when necessary. These other agencies include the California Highway Patrol and the Del Norte County's Sheriff's Department. Table 4-3 details the type of offenses that have been documented by the Police Department over the last six years. Crescent City has very low incidents of violent crime. From 1991 to 1997 there were only two homicides, 21 rapes, and eight incidents of arson.

Anticipated needs for the Police Department in the near future include: one officer for the Narcotic Task Force, one Citizen Assistant Officer, one parking garage and storage facility, upgrade of main police radio antenna, upgrade of a computer system (within two years), and remodeling of evidence room.

TABLE 4 - 3
SUMMARY OF PART I OFFENSES
Crescent City
1991-1997

Crime	1991	1992	1993	1994	1995	1996	1997
Willful Homicide	1	0	0	0	0	0	1
Forcible Rape	5	3	3	3	3	1	3
Robbery	6	6	8	5	6	11	7
Assault	13	7	10	10	17	17	33
Burglary	60	48	50	72	54	67	75
Vehicular Theft	11	10	11	16	18	14	11
Larceny Theft	256	323	331	288	378	300	309
Arson	0	0	0	1	4	3	0
TOTAL	352	397	413	395	480	413	439

Source: City of Crescent City Police Department, 1997.



TRAFFIC SAFETY

The responsibility of traffic safety is split between the City Police Department and the California Highway Patrol, which employs 23 uniformed officers that patrol throughout county. Table 4-4 shows the number of traffic violations and traffic accidents that the Police Department responded to between 1993 and 1997. The most significant findings is that there has been only one traffic related death in the last five years and the number of traffic citations issued has dropped by nearly half.

TABLE 4 - 4

TRAFFIC CITATION AND ACCIDENT SUMMARY
City of Crescent City
1993-1997

Offense	1993	1994	1995	1996	1997
Citations Issued	1,004	669	520	690	520
Traffic Accidents	179	157	140	176	205
Total Deaths	1	0	0	0	0
Total Injuries	36	45	34	39	48
TOTAL	1,220	871	694	905	773

Source: City of Crescent City Police Department, 1997.

4.8 FIRE PROTECTION

Within the Crescent City area there are two fire districts that are responsible for fire protection: Crescent City Volunteer Fire Department and Crescent Fire Protection District. These districts focus primarily upon emergency response services (EMT) and structural fires, though they also handle wildfires and, in the case of Crescent Fire Protection District, are capable of handling aircraft emergencies. Mutual aid agreements exist between the districts for back-up in large or multiple fire scenarios and for general emergencies.

CRESCENT CITY VOLUNTEER FIRE DEPARTMENT

The Crescent City Volunteer Fire Department provides fire protection and emergency services for the City of Crescent City. The department has 40 active volunteer firefighters, five non-active firefighters, and one part-time paid fire chief. Since the operation is volunteer, there are no employees at the station until they are called.

The Department has only two facilities: the administrative office located at 377 J Street and the fire station located at 520 I Street. The Department's equipment is housed in a 7,500 square foot facility with four bays that are double width. Inside the facility are three Class I pumpers and a van that carries emergency medical, hazardous material, and personal protective equipment.



The volunteer firefighters provide typical fire protection services including fire suppression and rescue, assisting private ambulance companies, and public education (e.g. fire training for schools and local businesses, Scout group tours). Annual emergency calls have averaged around 150. In 1997, there were 170 calls to which the fire department responded. Emergency response times are around three minutes per call on average.

CRESCENT FIRE PROTECTION DISTRICT

The Crescent Fire Protection District provides fire protection and emergency services for an area of 75 square miles that includes 16,700 residents or roughly two thirds of the entire Del Norte County population. The District's headquarters and main station are located at Washington Blvd. and Amador Street in the Crescent City area. There are two other substations located in the southern and eastern part of the district: a 5,000 square foot facility at 550 East Cooper Avenue and a 1,760 square foot facility at 175 Humboldt Road.

The District has 39 employees: four administrative support staff; 35 "volunteers" who work on a call-paid basis (i.e. they receive a stipend for every fire/emergency call); and one full-time district chief.

4.9 OTHER PUBLIC FACILITIES AND SERVICES

LIBRARY

The Del Norte County Library is the city's only public library. The library is located at 190 Price Mall. There are six staff librarians. The library is open six days a week, for eight hours, Tuesday through Friday, and four hours Mondays and Saturdays.

Due to ongoing budget constraints, the library is short staffed and there is a shortage of space for books. Although an exact count has not been taken, librarians estimate there to be approximately 50,000 volumes in the library. Due to the gap in supply and demand, the county library estimates an additional 20,000 volumes are needed to meet current demand.

ELECTRICITY

Pacific Power and Light is a privately-owned company that provides electricity to the entire Crescent City area.

TELEPHONE /COMMUNICATIONS

GTE provides telephone infrastructure to the greater Crescent City area. Currently (April 1998), there are two cellular service providers in the county: U.S Cellular and Cal North Cellular.

Falcon Cable provides cable television service to Crescent City. They have an office on 1440 Parkway Drive in Crescent City.



4.10 FINDINGS

- Currently (1997), the water system serves 3,696 accounts per month (including Pelican Bay Prison). Water consumption is at 62,387,688 gallons per month and 748,652,256 gallons per year. The average daily demand for the water system is 2,051,102 gallons per day.
- The Crescent City Landfill has reached its design capacity and has been operating under a cease and desist order from the Regional Water Quality Control Board since 1987, because it was violating waste discharge requirements, and thus threatening groundwater quality. The County has recently (1997) gained approval for its closure plan. As of December 1997, half of the landfill has been closed under a phased closure. According to the Del Norte County Solid Waste Management Authority, there will be a full closure of the landfill by the year 2001.
- In 1997, the DNCUSD discovered that the district lost 224 students from the previous year. If this decline continues, it could create problems for the District 's budget since lower daily attendance translates to a drop in State aid.
- Crescent City has very low incidents of violent crime. From 1991 to 1997 there were only two homicides, 21 rapes, and eight incidents of arson.
- Due to on-going budget constraints, the Del Norte County library is short of staff and there is a shortage of space for books. Librarians estimate there to be approximately 50,000 volumes in the library and an additional 20,000 volumes are needed to meet current demand.

4.11 PERSONS CONSULTED

Cox, Fred, District Chief, Crescent Fire Protection District

Gustafson, Dave, Public Works Director, Crescent City Public Works Department

Hanson, Joyce, Administrative Secretary to the Assistant Superintendent of Business, Del Norte County School District

Jahn, Rodney, Assistant Superintendent of Business, Del Norte County Unified School District

McBrayer, Stephanie, Planner, City of Crescent City

Metcalf, Richard, Chief of Police, City of Crescent City Police Department

Sanders, Robin, Assistant City Engineer, Crescent City Public Works Department

Wakefield, Steve, Fire Chief, Crescent City Volunteer Fire Department

Ward, Tedd, Analyst/Planner, Del Norte County Solid Waste Management Authority



Wright, Debra, Secretary, Crescent City Volunteer Fire Department

4.12 BIBLIOGRAPHY

Crescent City, City of. *1992 Water System Master Plan Update*. December 1992.

Crescent City Police Department. *Annual Crime Statistics*. 1990-1997.

Del Norte County Solid Waste Management Authority. *Crescent City Landfill Closure Master Plan*. 1996.

_____. *Countywide Integrated Waste Management Plan, Disposal Element*. 1997.

Del Norte, County of. *Del Norte County Local Coastal Program Land Use Plan*. Crescent City, CA. 1984.

_____. *Elk Valley Road - Industrial & Commercial Area Development*. September 1992.

_____. *Del Norte County General Plan*. 1977.

_____. *Del Norte County General Plan Element Revision*. October 1, 1996.

_____. *Sewer and Water Policy of the City of Crescent City*. March 20, 1995.



CHAPTER 5: HEALTH AND SAFETY

CHAPTER 5

HEALTH AND SAFETY

5.1 INTRODUCTION

As a way to avoid or reduce the loss of life, injury, and property damage resulting from natural and man-made hazards, safety is a primary concern within a community. Crescent City is susceptible to several natural hazards that have historically resulted in human casualties and serious injuries. These natural hazards and potential man-made hazards may result in constraints to future development and growth within the city. The purpose of this chapter is to define these natural hazards, which will ultimately provide for responsible planning to avoid or reduce hazardous conditions. This chapter addresses the following topics:

- Geologic and Seismic Hazards;
- Structural Hazards and Critical Facilities;
- Wildland and Urban Fire Hazards;
- Man-Made Hazards; and
- Flooding.

Consideration of these hazards will be the basis of safety planning that minimizes impacts to humans, as well as engineered structures.

5.2 CRITICAL FACILITIES

Critical facilities are those facilities and parts of a community's infrastructure that must remain operational after an emergency event, such as an earthquake, flood, or fire, in order for a community to respond effectively. Examples of critical facilities include hospitals, fire and police stations. Figure 5-1 shows the location of critical facilities in Crescent City. Careful planning and rehabilitation of critical facilities is imperative to ensure the health, welfare, and safety of the public.

5.3 GEOLOGIC AND SEISMIC HAZARDS

This section summarizes information about seismic hazards in the Crescent City region, with an emphasis on those hazards related to the region's natural setting, particularly its geology. Because geology and seismic conditions are not limited to geographic boundaries, this discussion includes the City of Crescent City and the unincorporated Crescent City area. Much of the information summarized in this section is derived from the California Department of Conservation (CDC), Division of Mines and Geology's *Special Publication 115*, which addresses emergency preparedness during a major seismic event, and the existing General Plan for Del Norte County. The CDC report contains current information about faults, landslides, liquefaction, and tsunami run-up for the Crescent City area. Throughout its history, no major significant earthquake damage has been sustained within the region. However, the tsunamis and river flooding of 1964 resulted in death and extensive property damage (Del Norte County General Plan 1976).



Seismic and geologic hazards in the Crescent City area potentially include:

- surface rupture of faults;
- ground shaking, liquefaction, and lurching during earthquakes;
- landslides resulting from earthquakes; and
- tsunami run-up.

There are no active faults identified within the region in either the current Del Norte County Seismic Safety and Safety Element or the CDC *Special Publication 115*. The closest identified faults are the Grogan fault, located offshore and slightly diagonal to the North Coast coastline; the Little Salmon fault located south of Eureka, in Humboldt County; and the Cascadia Subduction Zone (CSZ) also located offshore. The CSZ is a 750-mile-long offshore major-thrust fault zone extending from northern California to southern Canada.

The CSZ poses the greatest potential seismic risk to the Crescent City area. The risk of a seismic event along the CSZ has been assessed and the regional geologic and seismologic basis for determining potential damage from ground shaking, liquefaction, and seismically induced landslides has been developed for the region. This assessment illustrates a regional damage pattern that could result on the Gorda Segment of the CSZ from an earthquake with a magnitude of 8.4.

GROUND SHAKING AND STABILITY

The distribution of ground-shaking intensities during an earthquake, measured as peak ground acceleration and the more subjective “intensity,” is a function of the following primary factors:

- earthquake magnitude;
- distance of a site from the focus of the earthquake;
- attenuation of the earthquake waves between the focus and the site; and
- the nature of geologic materials and groundwater conditions at the site.

Systems were developed to combine these factors to assess the potential for ground shaking and resulting stability problems (i.e., liquefaction and differential subsidence). Liquefaction is the sudden large decrease of shearing resistance of a cohesionless soil and is associated with a sudden temporary increase of the material into a fluid mass. Liquefaction is caused by collapse of the soil structure by shock or strain (e.g., ground shaking). Fine unconsolidated sand or silt, saturated with water, is particularly subject to liquefaction (Del Norte County General Plan 1976).

The area around Lake Earl and the western portion of the coastal plain from Lake Earl north to the Smith River would experience considerable shaking intensity and high liquefaction potential in the planning scenario prepared for a great earthquake in the CSZ. Additionally, much of the Crescent City area is subject to liquefaction. The northern half of the Crescent City planning area is less susceptible to liquefaction because the area contains consolidated sedimentary, igneous, volcanic, or metamorphic rock. The main population center is on the Crescent City platform. Although it is relatively flat land with a relatively high water table, the platform and its overlying beach deposits are of Pleistocene age. Due to consolidation and cementation over time, deposits of this age in California have not been known to liquefy in modern times. Liquefiable deposits in the Crescent City area are confined mostly to the Holocene dune sands northwest of Lake Earl.

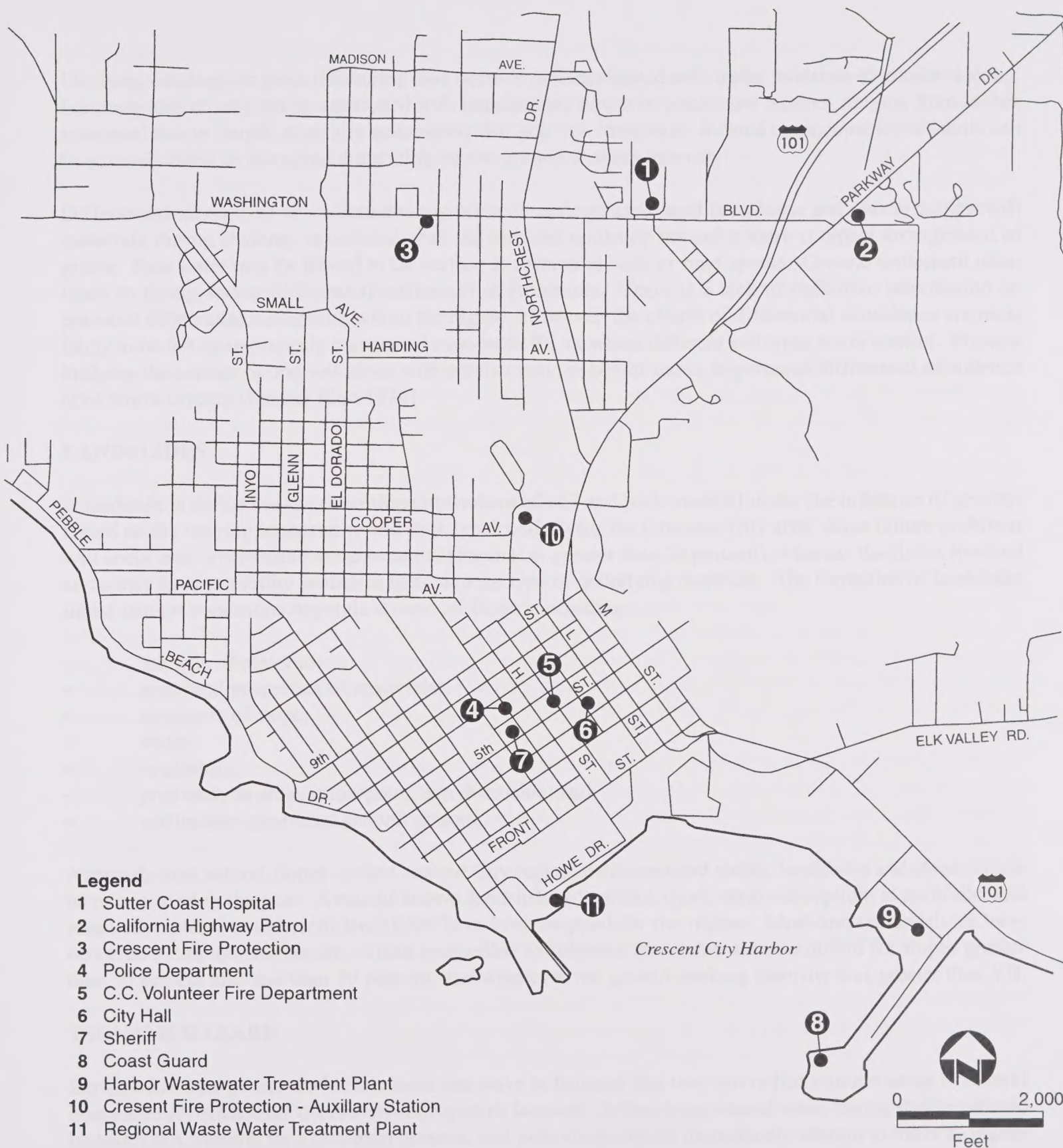


Figure 5-1
Crescent City - Critical Facilities



Lurching, cracking, or ground fissuring may occur in unconsolidated soils under moderate to intense shaking. Lurching may or may not be associated with liquefaction; however, cracks and fissures, ranging from inches to several feet in length, typically accompany this activity. Structures located on unconsolidated soils can be severely tilted or disrupted depending on the ground shaking intensity.

Differential subsidence or settlement may occur in underconsolidated (i.e., loose and poorly compacted) materials during shaking, associated with the induced tendency toward a more compact arrangement of grains. Pore water may be forced to the surface to form sand boils or mud spouts. Ground settlement often leads to tilting and/or differential settlement of structures. There is a lack of definitive information on potential differential subsidence within the region. However, the effects of differential subsidence are most likely to be felt on improperly compacted man-made fill, or where different soil types are in contact. Projects bridging the contact of one soil series with another may, in certain cases, experience differential subsidence (Del Norte County General Plan 1976).

LANDSLIDES

A landslide is defined as the downslope movement of soil and rock material under the influence of gravity. Based on the varying topography and rock types underlying the Crescent City area, slope failure problems will occur only where there are substantial slopes (i.e. greater than 30 percent), whereas the flatter lowland areas may have instability problems related to the type of underlying materials. The formation of landslides under natural conditions depends on several factors including:

- the type of material;
- structural properties of materials;
- steepness of slope;
- water;
- vegetation;
- proximity to areas undergoing active erosion; and
- earthquake-generated ground shaking.

Although most natural slopes in the Crescent City region are considered stable, landslides and slope failure have occurred in the past. Areas of known landslides of various types, areas susceptible to rockfalls, and areas susceptible to coherent landslides have been mapped for the region. Most known landslides have occurred in unpopulated areas. Areas susceptible to coherent landslides were identified for slopes greater than 30 percent and less than 70 percent, and whenever the ground-shaking intensity was greater than VII.

TSUNAMI HAZARD

Earthquakes may generate a local seismic sea wave or tsunami that may arrive just minutes or up to several hours after an earthquake occurs depending on its location. In low-lying coastal areas, strong shaking should be taken as a warning for a potential tsunami, and individuals should immediately attempt to move to higher ground. The lack of warning time from such a nearby event will result in higher casualties than if it were a distant tsunami source, wherein the Tsunami Warning System for the Pacific Ocean can warn threatened coastal areas for evacuation.



Crescent City suffered considerable property damage and loss of life as a result of a tsunami caused by the 1964 Great Alaska Earthquake. There were 11 fatalities, 29 city blocks in ruin or partial ruin, and 289 businesses and homes hit causing over \$16 million of damage. The 1964 tsunami exceeded a 100-year event at Crescent City and a 500-year event at some other California coastal sites. A tsunami run-up zone, resulting from a major seismic event along the CSZ, has been modeled for the Crescent City Area. The run-up zone would be within the Crescent City area. Crescent City's combination of near-shore undersea topography, resonant characteristics of the surrounding shoreline, and exposed position on the coast, make the city particularly susceptible to tsunamis originating in the Pacific.

Special Publication 115 presented by the Department of Conservation (1995) presents a potential tsunami scenario associated with a large earthquake of 8.4 magnitude occurring on the Gorda segment of the CSZ. This model would assume an incident wave of 30 feet in water 150 feet deep. In the Crescent City area, the tsunami destruction would exceed that which occurred from the 1964 Alaska earthquake. Serious damage can be expected to the city, and the unincorporated area of Del Norte County, that lies to the southeast of Front and M Streets along the shoreline. Under this scenario, a tsunami would run-up to 8th Street.

A tsunami originating locally is expected to result in more damage to the Crescent City area following intense earthquake shaking. In addition to the wave's force, damage will also result from water driven debris such as logs, small boats, building materials, and vehicles.

COASTLINE HAZARDS

Portions of California's coastal shoreline are eroding by natural geologic processes. Tidal motions, wave action, wind, and lack of durable coastal rock formations all contribute to coastline erosion. The Crescent City area coastline has a mix of sand beaches and coastal dunes, rocky headlands with steep slopes, pocket beaches, and estuaries.

The U.S. Army Corps of Engineers (Corps) has identified several areas where the coastline is experiencing critical erosion. The first is from Point St. George to Crescent City, where active erosion often impacts adjacent public roads necessitating on-going bluff stabilization and protection projects. Other critical erosion hazard areas includes a one mile stretch of coastline south of Crescent City, within the Redwood National Park, and one mile south of False Klamath Cove. Coastline erosion does not represent a significant safety hazard in this location (Del Norte County 1976).

5.4 STRUCTURAL HAZARDS AND CRITICAL FACILITIES

The following discussion regarding structural hazards and critical facilities in the Crescent City area is summarized from the Department of Conservation's *Special Publication 115* (1995).

Seismic performance provisions in California building codes are intended to protect life and reduce the potential for structural hazards and property damage. Existing buildings and other engineered structures will likely be subject to structural damage from earthquakes, tsunamis, or other natural disasters in the Crescent City area. The effects that earthquakes have on buildings and facilities depends on many variables, including:



- magnitude of the earthquake;
- geologic characteristics of the site;
- location of the earthquake;
- severity and duration of ground shaking;
- ground response according to soil types;
- soil structure interaction;
- code provisions in force at the time of the building's design;
- building construction type, configuration and size;
- quality of construction; and
- proper building maintenance by the owner once the building is occupied.

The date of construction is one of the most important variables in assessing a structure's seismic performance. This is due to building code provisions, which are not retroactive, as many buildings were erected prior to advanced performance standards. Generally, the older the building, the fewer and lesser performance standards were applied at the date of construction due to advancements in technology and science.

GROUND MOTION AND STRUCTURAL DAMAGE

Life safety is the primary objective in designing structures to withstand earthquakes. Damage control is a secondary consideration in the design of inhabitable structures. The "life safety" approach is based on the philosophy that earthquake-resistant design be used to develop structures to "resist major earthquakes of the intensity or severity of the strongest experienced in California without collapse, but with some structural as well as non-structural damage". According to the code, most structural damage should be limited to repairable damage, even in the event of major earthquakes. While design for life safety does not necessarily include damage control, damage control usually considers life safety in the design.

Buildings respond differently to certain kinds of ground motion, as each building has its own distinct vibrational characteristics based on its stiffness. Damage patterns to structures based on the changes in ground motion are also associated with distance and mass weight. In general, more damage will be experienced closer to the epicenter and fault. Additionally, light mass structures perform better than heavier structures. This is due to the heavier structures experiencing more resistance force as the ground moves away from a structure. The combination of distance and mass weight may also be a factor in structural damage as heavier structures will generally experience more damage than lighter structures even as distance increases. Most major structures perform well with a few exceptions:

- if the design barely meets the minimum standards;
- if the building is not built according to the architect's or engineer's specifications; and
- if the building owner modifies structural components of the building after occupancy.



EARTHQUAKE HAZARD MITIGATION LEGISLATION

The California Field Act was enacted after the 1933 Long Beach earthquake for the safety of public schools, which proved to be very successful with subsequent recent earthquakes. The Field Act originally applied to only new public schools. In 1969, the Garrison Act was enacted to retrofit older schools in existence that were considered hazardous in earthquake conditions. Private schools are excluded from the Field Act requirements.

In addition to the Field Act, other special California earthquake laws were enacted:

- The 1973 Hospital Act which was adopted after the 1971 San Fernando earthquake, which applied to the construction of new hospital buildings and alterations or remodeling of existing buildings.
- Hospital Retrofit (SB 1953) was passed in 1994 to ensure that hospitals remain functional after an earthquake to maintain the care of existing patients, as well as provide care to persons injured during the quake. This required new seismic standards for surveying and retrofitting acute care health facilities which do not meet the 1973 Hospital Act to comply with such standards within a specified period of time (Seismic Legislation on the Web, 1997).
- The Unreinforced Masonry (URM) Building Act (also known as Senate Bill 547 and later as Section 88-75) enacted in 1986. This requires cities and counties located in Seismic Zone 4 to identify potentially dangerous URMs and adopt plans for mitigating hazards posed by such buildings.
- An earthquake hazard disclosure requirement for residential dwellings adopted as part of the provisions in the Business and Professional Code (originally proposed as Assembly Bill 200) implemented in January 1993.

POTENTIALLY HAZARDOUS BUILDINGS

Certain building types are prone to greater earthquake damage and are often designated as potentially hazardous buildings. The most common types of potentially hazardous buildings that may be found in the area are discussed below.

Unreinforced Masonry Buildings

Unreinforced masonry (URM) buildings are old brick buildings built around the 1930s or before. Some may be considered historic structures. URM structures, particularly bearing-wall structures, are classified as one of the more hazardous forms of construction found in the county. These buildings usually will not hold up in strong earthquakes, or will become so heavily damaged that demolition is ultimately required. URM buildings do not have steel reinforcing throughout the brick and are often built with weak mortar that deteriorates with age. Many URMs also lack metal ties connecting the walls with floor or roof structures. During an earthquake, exterior walls often fall outward creating hazards to those fleeing from the building, as well as, those inhabiting the structure. Typically these URM buildings range from one to four stories and are concentrated in older downtown city areas. Crescent City has few or no URMs because wood has been



the principal building material in the area.

Pre-1940 Wood Frame Houses

Wood frame buildings are the most common type of construction in the area due to the history of the area's timber industry. Most wood frame structures are single-family dwellings with stud walls. Well-designed wood frame structures have a very good earthquake performance record. However, wood frame dwellings built before 1940 often shift on, or fall off, their foundations during earthquakes due to lack of foundation anchorage, unbraced post and pier support, or weak cripple walls. These buildings become unusable after a major earthquake. Life safety risk is low; however, repairs may be extensive.

The State of California enacted, under Assembly Bill 200, a requirement for earthquake hazard disclosure for residential dwellings. This required all transferors of 1-to-4 unit dwellings of conventional wood frame construction, after January 1, 1993, to deliver to the purchaser a copy of the homeowners guide to earthquake preparedness. This is intended to identify such hazards as unanchored foundation plates, unbraced cripple walls, and inadequately anchored water heaters. Where pre-1940 houses have not been retrofitted, homelessness may be a problem after a major earthquake.

Other Potentially Hazardous Structures

There are a variety of other hazardous structures. These include tilt-up concrete buildings built before the mid-1970s, non-ductile concrete frame structures built before the mid-1970s, and mobilehomes of any age installed without seismic restraints between the undercarriage and the ground.

The most common cause of severe damage to tilt-up constructed structures is the separation between the concrete tilt-up wall panels and the roof. Many tilt-up buildings constructed before the mid-1970s have weak connections between walls, roofs, and floors. This can lead to collapse of the roof and floors and cause the wall panels to fall outward thus endangering anyone fleeing the structure. These buildings are often used as warehouses or office buildings and are found in industrial parks.

Structures with non-ductile concrete frames are typically old, reinforced concrete frame structures without modern standards for detailing reinforcement in columns, beams, and joints. The strength and stiffness of these structures can degrade rapidly in an earthquake, causing serious damage and collapse.

Mobilehomes installed without seismic foundation restraints are frequently damaged. Where mobilehomes have properly installed State approved seismic restraints, experience suggests that these structures will experience little or no damage.

TSUNAMI HAZARDS

Single story buildings such as wood frame structures, mobilehomes, and light weight steel frame buildings are highly susceptible to tsunami damage. The flow of water into structures will damage or destroy building contents, as well as create life safety hazards. During the 1964 tsunami, the port facilities, 29 city blocks containing 289 homes and businesses, and 12 house trailers were damaged or were particularly hard hit.



5.5 WILDLAND AND URBAN FIRE HAZARDS

Much of unincorporated Crescent City is surrounded by forest lands. The fire hazard potential associated with these timberlands is a critical concern to life and property losses which could result from wildfires. Fires originating from natural or artificial sources can quickly spread, causing damage to human property.

The Crescent Fire Protection District (described in detail in Chapter 4) is the county agency responsible for approximately 75 square miles of the unincorporated county land in the Crescent City area. This area contains approximately two-thirds of the county's population. The Crescent Fire Protection District maintains a staff of 35 certificated personnel, four of whom are full time employees (Cox pers comm). Mutual Aid and Automatic Aid agreements exist between the other fire districts within the County, California Department of Forestry, and Crescent City Fire Department. Additionally, the Crescent Fire Protection District has jurisdiction over the Crescent City Harbor, as well as the County Airport within the Crescent City area to provide crash and rescue services.

In outlying and wildland areas surrounding Crescent City, one of the most pressing fire safety issues is the lack of water supply for fighting fires. Infrastructure to supply water to new developments and large developments in outlying areas does not exist. In the event of structural or wildland fires, the fire districts must truck out water to the fire source to fight fires. Access to these areas may also be a problem (Cox pers comm).

Structural deficiencies may also pose fire hazards within the county. Because many parts of the city and county are old, dated structures do not meet new fire codes. Structures in residential, commercial, industrial, and other areas in the Crescent City region are susceptible to potential fire hazards due to lack of code compliance. Many old structures are being retrofitted to comply with new fire safety standards, while others are being rebuilt (Cox pers comm). A more detailed discussion of urban fire resources is discussed in Chapter 4 "Public Facilities and Services."

5.6 MAN-MADE HAZARDS

In addition to natural hazards, several man-made hazards also exist that may result in human health effects or risks associated with loss of life or property damage. These could include hazards created as a result of man-made structures, utilization or accidental release of hazardous materials, disposal of toxic wastes, or hazards created by the County Airport.

PESTICIDES

Pesticides are widely used on public and private lands throughout the North Coast Region for a variety of agricultural, industrial, and silvicultural purposes. Insects, fungus, nematodes, and weeds are the principle pests being controlled. One of the principal concerns in pesticide application is the potential to contaminate surface and groundwater (Water Quality Control Board, North Coast Region 1985). The California Department of Food and Agriculture, represented locally by the County Agricultural Commissioners, is responsible for regulating pesticide use statewide through the California Agricultural Code. Hundreds of different pesticides are used in the region; however, some present a greater contamination risk due to their chemical properties. Volatility, solubility, rate of hydrolysis, degradation pathways, and other chemical-



specific properties govern the behavior of pesticides in the environment, and determine the potential for contamination of water resources (Water Quality Control Board, North Coast Region 1985).

Preliminary efforts have been made to develop a predictive model for estimating the risk of discharge into water sources posed by particular pesticide usage. However, due to several difficulties associated with the knowledge of physical/chemical properties, variable soil conditions, and site-specific properties, timely and effective use of a predictive model by the Regional Board are unlikely (Water Quality Control Board, North Coast Region 1985).

Based on several case studies, a risk of pesticides discharges and other materials to groundwater was found to exist in several areas throughout the North Coast Region, which may result in potential health hazards. A discharge risk to surface waters may also exist from pesticide use; however, the aerial application of herbicides to timberlands was not found to be a principal cause of water quality degradation in the region (Water Quality Control Board, North Coast Region 1985).

A majority of the pesticide use within Del Norte County is outside the Crescent City area on approximately 800 acres of Easter Lily Farms in the Smith River area (Buckles pers com). Within Crescent City, some other uses represent minor areas of pesticide application, including, pastureland, nurseries and other domestic uses.

OIL SPILLS

Crescent City is not likely to experience impacts resulting from large-scale oil spills. No oil production facilities are operating offshore of the North Coast area. Additionally, the Crescent City Harbor no longer accommodates oil transport shipping traffic. The most likely sources for potential oil or petroleum spills within the Crescent City Harbor are fuel piers and watercraft (Miller pers comm). It is possible that minor petroleum or fuel spills could occur due to boating accidents occurring within the harbor. However, these would not be considered significant sources that would cause major damage or create hazards to people or wildlife.

The U.S. Coast Guard maintains facilities within the Crescent City Harbor and would likely be one of the first organizations to respond in the event of oil spills in the area. The crew is trained in first-responder training, which would enable the Coast Guard crew to initiate clean-up efforts. The Coast Guard may utilize containment booms and absorbent pads as well as a skimming system to pick-up the spill sheen (Miller pers comm).

Additionally, petroleum or other chemical spills may occur on local roadways. It is possible that petroleum spills could occur due to vehicle or truck accidents. While these accidents would not typically be considered significant hazards for people, they are of particular concern to wildlife and/or sensitive habitats. Water quality degradation of rivers and creeks in the vicinity of local roadways is also a significant hazard.



TOXIC HAZARDS

The use, transportation, and storage of hazardous materials is managed under several Federal, State and local regulations.

Federal Regulations

The principal Federal regulatory agency is the Environmental Protection Agency (USEPA). Two key Federal regulations pertaining to hazardous wastes are described below. Other applicable federal regulations are contained primarily in Titles 29, 40, and 49 of the Code of Federal Regulations.

- *Resource Conservation and Recovery Act.* The Resource Conservation and Recovery Act (RCRA) enables the USEPA to administer a regulatory program that extends from manufacturing hazardous materials to their disposal, regulating the generation, transportation, treatment, storage, and disposal of hazardous waste at all facilities and sites in the nation.
- *Comprehensive Environmental Response, Compensation, and Liability Act.* The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as Superfund, was passed to facilitate the clean-up of the nation's toxic waste sites. In 1986, Superfund was amended by the Superfund Amendment and Reauthorization Act (SARA) Title III (community right-to-know laws). Title III states that past and present owners of land contaminated with hazardous substances can be held liable for the entire cost of the clean-up, even if the material was dumped illegally when the property was under different ownership.

State Regulations

In California, State regulations are equally or more stringent than Federal regulations. The State has been granted primary oversight responsibility by the USEPA to administer and enforce hazardous waste management programs. State regulations have detailed planning and management requirements to ensure that hazardous wastes are handled, stored, and disposed of properly to reduce risks to human health and the environment. Several key laws pertaining to hazardous wastes are discussed below.

- *Hazardous Materials Release Response Plans and Inventory Act of 1985.* The Hazardous Materials Release Response Plans and Inventory Act, also known as the Business Plan Act, requires businesses using hazardous materials to prepare a plan that describes their facilities, inventories, emergency response plans, and training programs. Hazardous materials are defined as raw or unused materials that are part of a process or manufacturing step, and not considered hazardous wastes. Health concerns pertaining to the release of hazardous materials, however, are similar to those relating to hazardous wastes.
- *Hazardous Waste Control Act.* The Hazardous Waste Control Act (HWCA) created the State Hazardous Waste Management Program, which is similar to, but more stringent than the Federal RCRA program. The HWCA is implemented by regulations contained in Title 26 of the California



Code of Regulations, which describes requirements for the proper management of hazardous wastes, including criteria for:

- identification and classification;
- generation and transportation;
- design and permitting of recycling, treatment, storage, and disposal facilities;
- treatment standards;
- operation of facilities and staff training; and
- closure of facilities and liability requirements.

These regulations list more than 800 materials that may be hazardous and establish criteria for identifying, packaging, and disposing of such wastes. Under the HWCA and Title 26, the generator of hazardous waste must complete a manifest that accompanies the waste from the generator to the transporter to the ultimate disposal location. Copies of the manifest must be filed with the California Department of Toxic Substances Control (DTSC).

- *Emergency Services Act.* Under the Emergency Services Act, the state developed an emergency response plant to coordinate emergency services provided by Federal, State, and local agencies. Quick response to incidents involving hazardous materials or hazardous waste is a key part of the plan, which is administered by the California Office of Emergency Services (OES). OES coordinates the responses of other agencies, including the USEPA, the California Highway Patrol, regional water quality control boards, air quality management districts, and county disaster response offices.
- *Other Laws, Regulations, and Programs.* Various other state regulations have been enacted that affect hazardous waste management. These include:
 - Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65); and
 - California Government Code Section 2.65962.5, which requires the Office of Permit Assistance to compile a list of potentially contaminated sites in the state.

Within Crescent City, the County Health Department is responsible for the regulation of hazardous materials. Although the Del Norte County does not have its own regulations for hazardous substances, the County Health Department is designated as a Certified Unified Planning Agency (CUPA), that is responsible for the regulation hazardous materials under State and Federal laws. For example, the County Health Department requires businesses to prepare a Hazardous Materials Business Plan for operations that use or store hazardous materials in excess of 55 gallons, 200 cubic-feet of compressed gas, or 500 pounds of dry weight. The County Health Department is also responsible for implementing underground/above ground storage tank laws, the California Accidental Release Program, and Extreme and Acute Hazardous materials regulations (Landis pers comm).

In the regulation of underground/ above ground storage tanks containing hazardous materials, the County is mostly concerned with the contamination of drinking water supplies. Currently, there is no contamination of drinking water wells that are in operation. However, other groundwater sources within the County are known to be contaminated, but are not of major concern due to their status as non-drinking water supply



sources. The Health Department is concerned about the future potential for the chemical methyl tertiary butyl ether (MTBE), a gasoline additive, to occur in drinking water sources and is maintaining close monitoring efforts (Perreault pers comm). Currently, there are several underground storage tanks within the city that are under remediation. However, very few would be considered to be a major public health concern (Perreault pers comm).

An additional public health concern in the Crescent City area is the identification of Superfund sites. One Superfund site currently exists within the Crescent City area near the Crescent City airport at the County Agriculture Department (Perreault pers comm). The Agriculture Department historically accepted and stored large quantities of pesticides on-site and eventually dumped the materials on-site. The Federal Environmental Protection Agency is the lead agency for clean-up and the site is currently under remediation (Perreault pers comm).

AIRCRAFT TRAFFIC HAZARDS

Jack McNamara Field is the County airport located in the Crescent City area. Jack McNamara Field is one of the county's best transportation facilities. It has great potential for business, tourist and general passenger development. The northeast-southwest runway is 5,000 feet long and 150 feet wide. It has an asphaltic-concrete surfacing finish and is marked and lighted for instrument landings. The northwest-southeast runway is similar in dimensions and surface finish.

An "Airport Zoning Ordinance" is maintained by the County, which regulates and restricts establishment of flight obstructions in the vicinity of the airport. This established a 12,000 foot restricted area for obstructions (structural and natural growth) from the end of any runway. This covers a distance of 2.2 miles, which incorporates nearly all of the urban development in the Crescent City area north of Pacific Avenue. Special height limits have been established for inner turning zones, outer turning zones, runway approach zones, glide slopes and transition zones. Height limits begin at 150 feet at the inner perimeter of the turning zones and increase at a rate of 20:1 to the outer perimeters.

5.7 FLOODING

Flooding is a natural hazard which continually threatens portions of the city and is considered a hazard when it threatens human life or damages property. Significant flooding hazards in the Crescent City area are limited to Elk Creek and coastal areas (including portions of the Harbor, and small tributaries emptying into the Pacific Ocean south of the Harbor and in the Pebble Beach area north and west of the city). These streams represent a hazard resulting from development occurring within, or in close proximity to, their respective floodplains. These flood hazards are presented in a flood insurance study conducted for the County in 1986, by the Federal Emergency Management Agency (FEMA). The study was prepared to revise and update previous flood insurance rate maps for the County and to promote sound land use and floodplain development.

Flooding along the Pacific coast near Crescent City is often associated with the simultaneous occurrence of very high tides, large waves, and storm swells during the winter. As a result, ocean-front development has not been compatible with the natural instability of the shoreline and the intense winter weather conditions



(FEMA 1986). Additionally, strong storm surges are the major cause of serious coastal flooding, with strong winds, heavy rains and high tides that back-up river and creek flows and cause flooding at river mouths.

Flooding along portions of the coastal area may also be attributed to tsunamis. Tsunamis could flood a considerable amount of the Elk Creek floodplain, including portions of downtown Crescent City. See discussion above in Section 5.2 of this chapter for more discussion on tsunami hazards.

FLOOD PROTECTION MEASURES

Two breakwaters have been constructed to reduce the effects of high tides, swells, and waves in the Crescent City Harbor, thereby reducing the potential for flooding hazards and affording additional flood protection.



5.8 FINDINGS

This section of the background report includes a summary of key findings that will guide policy development for the General Plan Update.

GEOLOGIC AND SEISMIC HAZARDS

- There are no active faults identified in the Crescent City area.
- The Cascadia Subduction Zone, located offshore, poses a potential seismic hazard for Crescent City.
- Landslides, groundshaking, and liquefaction resulting from a major seismic event could cause damage within the city.
- Tsunami run-up could result from a seismic event occurring far outside the city. The previous tsunami in 1964 caused major structural damage and resulted in fatalities and personal injury to people within Crescent City.

STRUCTURAL HAZARDS

- Ground motion and seismic events may cause structural damage to certain types of structures.
- Certain types of structures, such as unreinforced masonry buildings, pre-1940 wood frame houses, tilt-up concrete structures, and mobile homes are more prone to damage than others resulting from seismic activity.
- Crescent City contains few buildings subject to extensive structural damage.

FIRE HAZARDS

- The lack of water supply infrastructure and increasing development in outlying areas of the city may pose safety risks from fire hazards.

MAN-MADE HAZARDS

- Pesticide application is a concern due to the potential to contaminate extensive valuable groundwater resources. However, pesticides are not widely used in the Crescent City area.
- Crescent City is not likely to experience impacts resulting from large-scale petroleum spills. However, in the event of petroleum spills in the area, the U.S. Coast Guard maintains facilities to accommodate clean-up efforts.
- The Del Norte County Health Department is a Certified Unified Planning Agency (CUPA) responsible for the regulation of hazardous materials within the city.



- Currently, no active groundwater or drinking water supply sources used are contaminated. However, future potential for methyl tertiary butyl ether contamination to occur in drinking water or groundwater resources is a concern.
- Aircraft traffic hazards at Jack McNamara Field (County Airport) may pose a potential risk to residents in the Crescent City area north of Pacific Avenue.

FLOODING HAZARDS

- Flooding occurs along Elk Creek and other minor watercourses in the Crescent City area. Future development usually increases flooding by reducing permeable surfaces, concentrating flows, and eliminating storage.
- Flooding hazards along the coast may also be attributed to tsunamis and pose threats to the Crescent City area.

5.9 PERSONS CONSULTED

Buckles, James, Agricultural Weights and Measures Inspector, Del Norte County Department of Agriculture

Cox, Fred, Fire Chief, Crescent Fire Protection District

Landis, Steve, Regulatory Environmental Health Specialist II, Del Norte County Health Department

Miller, Chris, BM-1, Executive Petty Officer, U.S. Coast Guard

Perreault, Leon, Environmental Health Specialist, Del Norte County Health Department

5.10 BIBLIOGRAPHY

California Department of Conservation, Division of Mines and Geology. *Planning Scenario in Humboldt and Del Norte Counties, California for a Great Earthquake on the Cascadia Subduction Zone*. Sacramento, CA 1995.

Del Norte County. *Del Norte County General Plan*. 1976.

Federal Emergency Management Agency. *Flood Insurance Study, Del Norte County California Unincorporated Areas*. 1986.

Griffin, Wallace. *Dark Disaster: Tsunami*. Crescent City, CA. March 28, 1964.

North Coast Regional Water Quality Control Board. *Control of Pesticide Discharges to North Coast Waters*. Santa Rosa, CA. 1985.



Seismic Legislation on the Internet. Available at:

<http://www.eeri.org/endow/leg/HospitalRetrofit.html>. 12/30/97.



CHAPTER 6: NOISE

CHAPTER 6

NOISE

6.1 INTRODUCTION

This chapter provides background information to assist decision-makers in preventing incompatibility of land uses related to excessive noise levels and to protecting the integrity of residential, recreational, and other sensitive receptors. Significant noise sources include traffic on major roadways and highways, railroad operations, airports, and representative industrial activities and fixed noise sources.

This chapter includes the following categories:

- Characteristics of sound;
- Federal, State, and city guidelines and standards;
- Existing noise conditions; and
- Methods of noise reduction.

6.2 CHARACTERISTICS OF SOUND

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Noise can be defined as unwanted sound. Sound is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). In particular, the sound pressure level has become the most common descriptor used to characterize the loudness of ambient sound. The decibel (dB) scale is used to quantify sound intensity. Because sound pressure can vary by over one trillion times within the range of human hearing, a logarithmic loudness scale is used to keep sound intensity numbers at a convenient and manageable level. Since the human ear is not equally sensitive to all frequencies within the entire spectrum, noise measurements are weighted more heavily within those frequencies of maximum human sensitivity in a process called “A-weighting,” written as dBA. The human ear can detect changes in sound levels of approximately three dBA under normal conditions. Changes of one to three dBA are typically notable under controlled conditions, while changes of less than one dBA are only discernable under controlled, extremely quiet conditions. A change of five dBA is typically notable to the human ear in an outdoor environment.

Noise is generated from point sources, such as construction equipment, and from line sources, such as a road containing moving vehicles. Because of spreading losses, noise attenuates (decreases) with distance. The typical atmospheric attenuation rate for point source noise is six dBA per doubling of the distance as predicted by the equation:

$$\text{Attenuated dBA} = 20 (\log) \frac{\text{measured distance}}{\text{reference distance}}$$

A line source will also attenuate with distance, but the rate of attenuation is a function of both distance and the type of terrain over which the noise passes. Hard sites, such as areas with paving, attenuate noise at a rate of three dBA per doubling of the distance as predicted by the equation:

$$\text{Attenuated dBA} = 10 (\log) \frac{\text{measured distance}}{\text{reference distance}}$$



Soft sites, such as undeveloped areas, open space, and vegetated areas attenuate line source noise at a rate of 4.5 dBA per doubling of the distance as predicted by the equation:

$$\text{Attenuated dBA} = 15 (\log) \frac{\text{measured distance}}{\text{reference distance}}$$

These equations represent the extremes. Most areas will actually contain a combination of hard and soft elements with the noise attenuation measured somewhere in between these two factors. The only way to actually determine the absolute amount of attenuation that an area provides is through field measurement under operating conditions with subsequent noise level measurements conducted at varying distances from a constant noise source.

Objects that block the line-of-sight attenuate noise if the receptor is located within the “shadow” of the blockage, such as behind a sound wall. If a receptor is located behind the wall, but has a view of the source, the wall will do little to attenuate the noise. Additionally, a receptor located on the same side of the wall as the noise source may experience an increase in the perceived noise level as the wall reflects noise back to the receptor, possibly compounding the noise.

Time variation in noise exposure is typically expressed in terms of the average energy over time (called L_{eq}), or alternatively as a statistical description of the sound level that is exceeded over some fraction of a given observation period. Because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, State law requires that, for planning purposes, an artificial dB increment be added to quiet time noise levels in a 24-hour noise descriptor called the Community Noise Equivalent Level (CNEL), or the day/night average noise level (L_{dn}).

NOISE CONTOURS

The interpretation of noise contours is generalized and not an exact science. The measurements by sophisticated instruments are affected by many variables in a particular area. However, these individual effects are generalized so that noise contour describes the impact that can normally be expected. Noise contour lines themselves are not specific boundaries of noise tolerance. A contour line denoting a 65 dBA limit, for example, does not imply that residents on one side of the line are seriously affected, while on the other side of the line tolerable conditions exist. Rather, the area between 75 dBA and 65 dBA indicates that residents within this vicinity can usually anticipate a high level of noise.

EFFECTS OF NOISE

High noise levels can interfere with a broad range of human activities in a way which degrades public health and welfare. Such activities may include:

- speech communication;
- telephone communication;
- listening to television and radio;
- listening to music;
- concentration during mental and physical activities;



- relaxation; and
- sleep.

Interference with listening situations can be determined in terms of the level of the environmental noise and its characteristics. The amount of interference in non-listening situations is often dependent upon factors other than the physical characteristics of the noise. These may include attitude toward the source of an identifiable noise, familiarity with the noise, characteristics of the exposed individual, and the intrusiveness of the noise.

The only well established effects of noise on human health, other than nuisance, is noise induced hearing loss, either total or partial, permanent or temporary. The primary measure of hearing loss is the hearing threshold level; the level of a tone that can just be detected by an individual. As a person is exposed to increased noise levels they may experience a threshold shift. Lower noise levels are no longer discernable by that individual. A threshold shift can be measured in terms of dBA. One dBA is the normal hearing threshold for a normal, healthy, individual. If a person experiences a 20 dBA threshold shift, that person can only distinguish noises greater than 20 dBA as opposed to the usual 0-1 dBA threshold of hearing. Exposure to very high noise levels for lengthy periods of time can generate temporary or permanent threshold shifts. In general, A-weighted sound levels must exceed 60-80 decibels before a person will experience temporary threshold shifts. The greater the intensity level above 60-80 decibels and the longer the exposure, the greater length of the temporary threshold shift.

Most sounds consist of a broad range of sound frequencies. Because the human ear is not equally sensitive to all frequencies, several frequency-weighting schemes have been used to develop composite decibel scales and approximate the way the human ear responds to sound levels. The "A-weighted" decibel scale (dBA) is the most widely used for this purpose. Typical A-weighted sound level for various types of sound sources are summarized in Figure 6-1.

6.3 NOISE GUIDELINES AND POLICIES

Various noise guidelines and standards have been promulgated on the Federal, State, and local levels. Relevant guidelines and standards are discussed below.

FEDERAL GUIDELINES AND STANDARDS

The Federal Highway Administration (FHWA) has developed noise standards which are typically used for Federally funded roadway projects or projects that require either Federal or Caltrans review. These noise standards are based on L_{eq} and L_{10} values. (Note that L_{10} represents a noise level that is exceeded ten percent of the time and is typically about 3 dBA greater than the L_{eq} value.)

The FHWA values are the maximum desirable values by land use type and area based on a "trade-off" of what is desirable and what is feasible. These values recognize that in many cases lower noise exposures would result in greater community benefits. FHWA design noise levels are shown in Table 6-1.



TABLE 6-1

FHWA DESIGN NOISE LEVELS

Activity Category	Design Noise Levels		Description of Activity Category
	L_{eq} (dBA)	L_{10} (dBA)	
A	57 (exterior)	60 (exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (exterior)	70 (exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (exterior)	75 (exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	---	---	Undeveloped lands.
E	52 (interior)	55 (interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.
Note: Either L_{eq} or L_{10} (but not both) design noise levels may be used on a project.			
Source: Federal Highway Administration			

In addition to FHWA standards, the USEPA has identified the relationship between noise levels and human response. The USEPA has determined that over a 24-hour period, an L_{eq} of 70 dBA will result in some hearing loss. Interference with activity and annoyance will not occur if exterior levels are maintained at an L_{eq} of 55 dBA and interior levels at or below 45 dBA. While these levels are relevant for planning and design and useful for informational purposes, they are not land use planning criteria because they do not consider economic cost, technical feasibility, or the needs of the community.

In addition to the L_{eq} limitations discussed above, in accordance with Page 2-3 24 CFR, Part 51, Subpart B "Noise Abatement and Control" (U.S. Department of Housing and Urban Development, August 1984), the USEPA set 55 dBA L_{dn} as the basic goal for residential noise intrusion. However, other Federal agencies, in consideration of their own program requirements and goals, as well as difficulty of actually achieving a goal of 55 dBA L_{dn} , have settled on the 65 dBA L_{dn} level as their standard. At 65 dBA L_{dn} activity interference is kept to a minimum, and annoyance levels are still low. It is also a level that can realistically be achieved.

The Department of Housing and Urban Development (HUD) was directed by the Housing and Urban Development Act of 1965 (Public Law 89-117) "to determine feasible methods of reducing the economic loss and hardships suffered by homeowners as a result of the depreciation in the value of their properties following the construction of airports in the vicinity of their homes."

Sound Source	Sound Level (dBA)*	Response
Carrier deck jet operation	140	
Civil defense siren (at 100 feet)	130	Painfully loud
Jet takeoff (200 feet)	120	Threshold of feeling and pain
Riveting machine (at 1 foot) Rock music concert	110	
Pile driver (at 50 feet) Ambulance siren (at 100 feet)	100	Very loud
Heavy truck (50 feet)	90	
Pneumatic drill (at 50 feet) Freight train cars (50 feet)	80	
Garbage disposal in home Freight train cars (at 100 feet) Freeway traffic (50 feet) Vacuum cleaner (at 10 feet)	70	Moderately loud
Air conditioning unit (20 feet)	60	
Speech in normal voice (15 feet)	50	
Residence-typical movement of people, no TV or radio	40	Quiet
Soft whisper (5 feet)	30	
Recording studio	20	
	10	
	0	Threshold of hearing

* Typical A-weighted sound levels in decibels. "A" weighting approximates the frequency response of the human ear.

Source: U.S. Council on Environmental Quality 1970.

Figure 6-1
Weighted Sound Levels and Human Response



HUD first issued formal requirements related specifically to noise in 1971 (HUD Circular 1390.2). These requirements contained standards for exterior noise levels along with policies for approving HUD-supported or assisted housing projects in high noise areas. In general, these requirements established the following three zones:

- 65 dBA L_{dn} or less - an *acceptable zone* where all projects could be approved;
- exceeding 65 dBA L_{dn} but not exceeding 75 dBA L_{dn} - a *normally unacceptable zone* where mitigation measures would be required and each project would have to be individually evaluated for approval or denial. These measures must provide five dBA of attenuation above the attenuation provided by standard construction required in a 65 to 70 dBA L_{dn} area and 10 dBA of attenuation in a 70 to 75 dBA L_{dn} area; and
- exceeding 75 dBA L_{dn} - an *unacceptable zone* in which projects would not, as a rule, be approved.

HUD's regulations do not include interior noise standards. Rather, a goal of 45 dBA L_{dn} is set forth and attenuation requirements are geared towards achieving that goal. HUD assumes that using standard construction, any building will provide sufficient attenuation so that if the exterior level is 65 dBA L_{dn} or less, the interior level will be 45 dBA L_{dn} or less. Thus, structural attenuation is assumed at 20 dBA. Note that HUD regulations were promulgated solely for residential development requiring government funding and are *not* related to the operation of schools or churches.

The Federal government regulates occupational noise exposure common in the workplace through the Occupational Health and Safety Administration (OSHA) under the U.S. EPA. Noise exposure of this type is dependant on work conditions and is addressed through a facility's or construction contractor's Health and Safety Plan. With the exception of construction workers involved in facility construction, occupational noise is irrelevant to this study and is not further addressed in this document.

CRESCENT CITY NOISE STANDARDS

Crescent City does not currently have a noise ordinance to regulate noise associated with different land uses within the city. Noise complaints are usually referred to the Crescent City Police Department and are considered under "peace disturbance" within the Municipal Code (Metcalf pers comm).

The current City of Crescent City General Plan incorporates the Del Norte County General Plan noise element by reference. Accordingly, the goals and policies in the noise element of the Del Norte County General Plan currently apply to Crescent City. Table 6-2 summarizes the County's and therefore the City's current General Plan noise standards.



TABLE 6-2
DEL NORTE COUNTY LAND
COMPATIBILITY GUIDELINES FOR NOISE

Priority	Land Use	Maximum Acceptable Exterior Noise Levels
1	Schools, hospitals, convalescent and other types of long-term medical homes ^a	55 dBA
2	Residential and Recreational Uses ^a	65 dBA
3	Commercial Uses ^b	65 dBA
4	Industrial and heavy commercial uses ^b	70 dBA
Notes: ^a - levels of incoming noise ^b - levels of noise radiated These noise levels are to be determined by the L10 and CNEL noise level monitoring method.		

The maximum noise levels specified for Priority 1 and 2 land uses are the maximum noise levels that the County considers acceptable for these uses. In the case of a new Priority 1 or 2 land use development, noise levels on the project site would need to be at or below the specified levels to be acceptable. If a new development is proposed adjacent to a Priority 1 or 2 land use, the new development would need to have sound levels at the existing Priority 1 or 2 site that is less than the criteria indicated in Table 6-3. Noise generated by Priority 3 or 4 land uses must be below the indicated criteria at the site's property line to be considered acceptable.

Policy 3 in the existing General Plan noise section states "existing activities within a commonly zoned area should not be allowed to increase the noise level over 5 dB(A) above the ambient noise level."

6.4 EXISTING CONDITIONS

Noise sources can be grouped into two categories: mobile and stationary. Mobile sources are noise producers that move within the city, and include vehicle traffic on roads and highways and aircraft noise. Primary stationary sources in the city are associated with industrial, businesses, and utility facilities.

In addition to noise producers, the other major factor in measuring current noise conditions is an assessment of sensitive receptors in the city. Typically, sensitive receptors are defined to include residential areas, hospitals, convalescent homes and facilities, schools, and other similar land uses.

Community Noise Survey

A community noise survey was conducted at six locations in the city to characterize typical noise levels. Measurement locations are identified as Positions A through F and are identified in Figure 6-2. All measurements were taken on Monday and Tuesday, July 20 and 21, 1998 using Larson-Davis Model 700 Type 2 sound level meters. On those days skies were overcast with temperatures in the range of 55 to 65



Figure 6-2
Noise Monitoring Locations



degrees and with light winds from the south and southwest. The following is a description of each measurement position.

Position A. This position was located on 3rd Street between H and I Streets at about nine feet from the curb. 3rd Street is a two-lane street in the downtown urban area. Traffic was the predominant source of noise at this location. Occasional noise from nearby construction was also audible. Measurements were stopped when a nearby crane was operating. Sound level data was collected over a 20 minute period beginning at 3:19 p.m. July 20, 1998.

Position B. This position was located near a cheese factory on E Street between 8th and 9th Streets. The meter was placed 25 feet from the street curb and 100 feet from factory loading dock. Sound level data was collected over a 20 minute period beginning at 4:03 p.m. on July 20, 1998.

Position C. This position was located along the northbound side of Highway 101 near the fairgrounds. The meter was placed about 50 feet from the curb which was about 115 feet from the centerline of the five-lane highway. Sound level data was collected over a 20-minute period beginning at 4:34 p.m. July 20, 1998.

Position D. This position was located along the southbound side of Highway 101 about 200 feet from Elk Valley Road. The meter was placed about 50 feet from the curb which was about 115 feet from the centerline of the five-lane highway. Sound level data was collected over a 20-minute period beginning at 10:49 a.m. on July 21, 1998.

Position E. This position was located along D Street between 5th and 6th Street in a park approximately 50 feet from the curb and 70 feet from the roadway centerline. Traffic was the predominant source of noise at this location. An occasional barking dog and a distant tractor mower were audible. Sound level data was collected over a 20-minute period beginning on at 11:24 a.m. on July 21, 1998.

Position F. This position was located along north side of Washington Boulevard between Summer Street and the entrance to a nearby Walmart approximately 50 feet from the curb, 100 feet from the roadway centerline, and 65 feet from the Walmart entrance. Traffic was the predominant source of noise at this location. Sound level data was collected over a 20-minute period beginning at 12:05 p.m. on July 21, 1998.

Table 6-3 summarizes the results of the community noise survey.



TABLE 6-3
COMMUNITY NOISE SURVEY RESULTS
City of Crescent City
1998

Position	Leq	Lmax	Lmin	L10	L33	L50	L90
A	64.4	80.0	48.5	67.5	64.0	61.5	54.0
B	59.3	71.5	52.0	61.5	59.0	55.0	55.0
C	66.9	80.0	54.5	69.5	66.5	65.5	61.5
D	68.8	83.0	52.5	72.0	67.5	66.0	61.0
E	50.4	68.5	42.5	52.5	48.5	47.0	45.0
F	64.9	81.5	48.5	67.5	64.0	62.5	56.0

Note: L_{90} is often considered to be representative of the background sound level.

Source: Jones & Stokes Associates, 1998.

MOBILE SOURCES

Roadway and Highway Noise

The noise generated from vehicles using roads and highways within the city is determined primarily by the number and type of vehicles (mix of automobiles, trucks, and other large vehicles) present on a given roadway. To determine existing noise conditions within the planning area, noise measurements were made at representative locations within the city. The locations monitored and the results of this monitoring are presented on Table 6-4.

Sound32 (Caltrans' computer implementation of the Federal Highway Administration Traffic Noise Prediction Model (FHWA-RD-77-108)) and traffic information detailed in the 1994 Del Norte County General Plan Revised Draft Background Report and the 1996 Crescent City General Plan Draft Background Report were used to develop baseline traffic noise contours for major roadways in the Planning Area. Table 6-4 summarizes the daily traffic volumes, the predicted noise level at 100 feet from the roadway centerline, and the distance to the 55, 65, and 70 dB-Ldn contours. The contour levels correspond to the land use compatibility levels specified in Table 6-2. Because these calculated contours do not take into account shielding caused by local buildings, walls, or topographical features, the distances should be considered to be worst-case estimates of noise exposure along roadways in the Planning Area.

TABLE 6-4

TRAFFIC NOISE LEVELS ALONG ROADWAYS
Crescent City Planning Area
1998

Roadway	Segment	Daily Traffic Volume	Ldn @ 100 feet	Distance (feet) to 70 Ldn Contour from Roadway Centerline	Distance (feet) to 65 Ldn Contour from Roadway Centerline	Distance (feet) to 55 Ldn Contour from Roadway Centerline
U.S. 101	Sand Mine Road to Crescent City Limits**	5,500	66	52	113	525
	Crescent City Limits to Elk Valley Road**	9,100	68	74	158	736
	Elk Valley Road to Front Street**	16,600	71	110	236	1,096
	Front Street to 4 th Street**	13,900	70	97	209	970
	4 th Street to 9 th Street**	22,400	72	134	288	1,339
	9 th Street to Northcrest Drive**	21,700	72	132	284	1,318
	Northcrest Drive to Parkway Drive**	26,500	72	140	302	1,402
	Parkway Drive to Washington Blvd. **	11,000	68	72	156	724
	Washington Blvd. to U.S. 199**	9,400	68	68	147	681
Humboldt Road	U.S. 101 to Howland Hill Road	2,600	58	*	33	154
Howland Hill Road	Elk Valley Road to Redwood National Park Boundary	2,400	57	*	31	145
Elk Valley Road	U.S. 101 to Howland Hill Road	4,400	60	*	46	215
	Howland Hill Road to U.S. 199	1,600	55	*	*	106
Parkway Drive	Washington Boulevard to U.S. 199	5,700	61	*	54	251
Lake Earl Drive	Washington Boulevard to Backwell Lane	7,000	62	*	62	288

Note: Except where noted, traffic volumes are based on 1994 traffic volumes from the Del Norte County General Plan Revised Draft Background Report, 1999.

* Contour is less than 30 feet from the centerline of the roadway.

** Traffic volumes based on Crescent City General Plan Draft Background Report, 1999.

Source: Jones & Stokes Associates, 1998.



Aircraft Noise

In addition to roadway and highway noise, another mobile noise source in the city is air traffic using the county airport. To date, a noise study of the airport has not been done for this facility. As development continues to move closer to the airport, and the types of aircraft using the county airport change, it will be necessary for the County to complete a full noise assessment of the facility, including noise contouring. Figure 6-3 shows a noise contour map for the County airport; however, it is based on noise contours for the Humboldt County Airport. This figure gives an approximation of what the noise levels are near the airport and therefore should not be interpreted as existing conditions.

STATIONARY SOURCES

Stationary noise sources typically include facilities such as manufacturing plants, processing plants, mines, shooting ranges, and so forth. There are no significant sources of stationary noise within the city.

6.5 METHODS OF NOISE REDUCTION

There are two basic methods to achieve noise reduction: physical methods available to architects, developers, and builders; and administrative techniques which can be used by local government to require or encourage improved noise compatibility.

PHYSICAL METHODS

Physical Noise reduction techniques can be grouped into four categories:

- *Acoustical Site Planning* - uses the arrangement of building and land to minimize noise impacts. Acoustical site planning techniques include: placing as much distance as possible between the noise source and the noise sensitive area; using buildings as barriers; and orienting noise-sensitive buildings to face away from the noise source.
- *Acoustical Architectural Design* - incorporates the use of noise reducing techniques in building design. For example, noise can be reduced if the building is limited to one story instead of two.
- *Acoustical Construction* - incorporates the use of noise reducing techniques and materials in building construction.
- *Noise Barriers and Deflectors* - these being erected between noise sources and noise sensitive areas can reduce the noise impact. Barriers and deflectors include berms made of sloping mounds of earth, walls, fences, thick and dense planting of trees and vegetation, elevating or lowering noise sources, or a combination of these techniques.

ADMINISTRATIVE METHODS

The administrative techniques available to local government to reduce noise impacts include, but are not limited to the following:

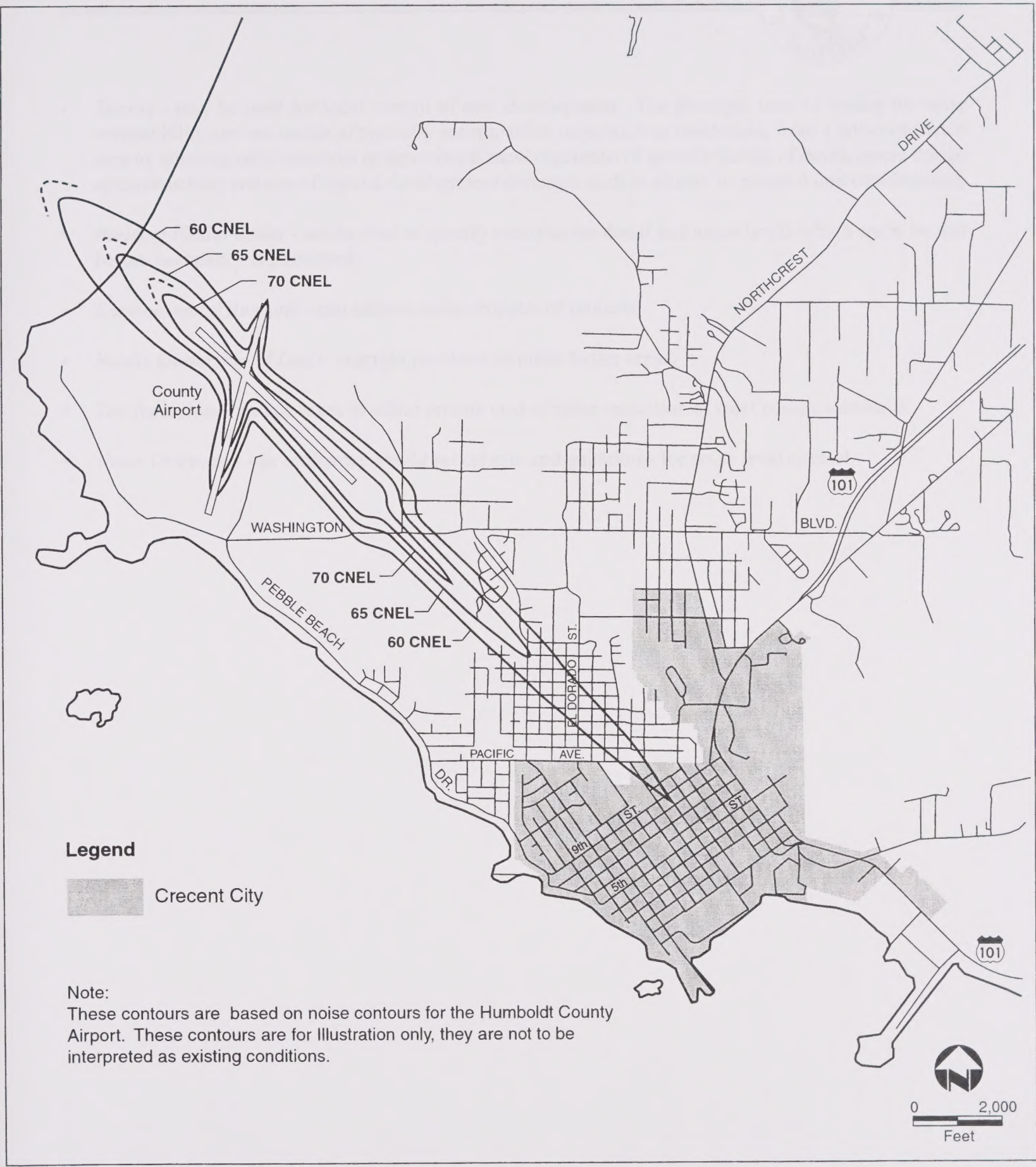


Figure 6-3
Crescent City - Noise Contour Map



- *Zoning* - may be used for local control of new development. The principal uses of zoning for noise compatibility are: exclusion of typically incompatible uses, such as residences, from a noise-impacted area by allowing only industrial or agricultural uses; regulation of specific details of development design or construction; and use of special development concepts such as cluster or planned unit development.
- *Building Health Codes* - can be used to specify construction detail and noise levels which are to be met before occupancy is permitted.
- *Environmental Analysis* - can address noise impacts of projects.
- *Public Ownership of Land* - outright purchase of noise buffer areas.
- *Tax Incentives* - reduce taxes to offset private cost of noise reduction to meet county standards.
- *Noise Ordinance* - an ordinance would set criteria and guidelines for noise level control.



6.6 FINDINGS

- Currently, the City does not have a noise ordinance. Development of a noise ordinance will enable the City to develop noise standards for the consideration of future development and to reduce the siting of proximate incompatible land uses.
- Noise reduction may be accomplished through both physical and administrative methods.
- The primary source of noise in the city is from highway and roadway noise.
- Changes in the existing noise environment will be more noticeable in the rural portions of the city given the relatively quiet conditions that exist.
- A noise assessment of the County airport is needed in order to assess impacts on future growth near the airport facility.
- Overall, the city can be defined as having low ambient noise levels.

6.7 PERSONS CONSULTED

Metcalf, Rick, Police Chief, Crescent City Police Department

6.8 BIBLIOGRAPHY

Del Norte County. 1976. *Del Norte County General Plan*. Crescent City, CA.

U.S. Department of Housing and Urban Development. *A Guide to HUD Environmental Criteria and Standards Contained in 24 CFR Part 51*. August 1984.

U.S. Department of Housing and Urban Development. *The Noise Guidebook*. March 1985.

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